

THE RELATIONSHIPS AMONG MESSAGE RECALL, COGNITIVE RESPONSES,
AND ADVERTISING EFFECTIVENESS: EFFECTS OF VALUE, CREDIBILITY,
AND PRIOR KNOWLEDGE

BY

DAVID A. CRONKHAUSE

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the way possible

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THE RELATIONSHIPS AMONG VERBAL RECALL, COGNITIVE RESPONSES,
AND ATTITUDES: ATTENTIVENESS, EFFECTS OF DIAL, CONTEXT,
AND PRIOR KNOWLEDGE

By

William Christensen

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Chairman: Joseph W. Seta
Major Department: Marketing

Measures of recall and cognitive responses are widely used as predictors of advertising effectiveness. In view of their importance, researchers have examined the influence of a variety of factors on the relationships between recall, cognitive responses, and brand attitudes. However, one key factor has been ignored. Not even a single study has examined the relationship between cognitive responses and brand attitudes over time, and only one study has examined the relationship between recall and brand attitudes over time.

The primary thrust of this research was to examine the cognition-attitude relationship over time. In addition, the moderating roles of prior knowledge and availability of contextual information were examined.

The central theme of this research is that consumers rely on threat cognitions that are salient in memory, at the time of decision making, to make an evaluational judgment. It was argued that the different types of memory traces pertaining to a brand were forgotten at different rates. Thus, over time, consumer judgments would be dominated by different types of memory traces.

A framework was developed for classifying memory traces, resulting from advertising exposure, into a set of subjectively evaluative and objectively evaluative set of categories that were (a) important as predictors of attitude, and (b) differentially sensitive to delay.

An experiment was conducted, using 175 student subjects, to examine the temporal characteristics of the different types of memory traces and their role in attitude judgments made immediately after an exposure or after a delay.

The results of the study suggest that recalled facts, characteristics, and overall evaluations, retrieved at the time of decision making, are the top negative elements subject

to making conditional judgments, both immediately after an exposure and after a delay.

CHAPTER ONE Introduction

Introduction

Imagine the following scenario. You have been considering the purchase of a house for some time now, considering your upcoming birthday, you decide to take the purchase to the next phase. One evening, while flipping through the pages of a magazine you spot an advertisement for Microsoft's latest product release, the Windows 7000. It reminds you of your resolution to buy a house, and you spend a few minutes viewing the advertisement. Over the next week you receive other advertisements for houses. A construction site a friend reveals that the real estate market in New York after the best prices. Your friend also gives you the telephone number of one of the agents he has bought from in the past. During the next week you learn no new news, and you forget about the house purchase until Saturday's mail brings with it the old letters that you had ordered. You realize that if you want to buy by mail you must order immediately. The old news and left to remember

the information you have acquired about the different brands so that you can compare the alternatives and decide what to order.

Illustrations such as this are not uncommon. In most instances, consumers do not purchase a product immediately after seeing an advertisement. Often, days, if not weeks, elapse between exposure to an advertisement and purchase. Frequently, advertisements are interested in influencing decisions made later on in time. Accordingly, the literature in marketing and consumer behavior has little to say about what types of information learned from the advertisements will be remembered or how the information retained will influence judgment and action at a later point in time.

It is surprising, and even disconcerting, that despite expanding advertising expenditures (advertising expenditures of the 100 leading national advertisers have more than tripled in the period 1975-1980 from \$5.6 billion to \$17.1 billion), the leading National Advertisers still have a paucity of knowledge about the delayed effects of advertising. A review of the research in advertising that explicitly considers time as an independent variable shows that there are three streams of research that consider the effects of time: advertising copy-test, research, and the measurement of time trends.

The studies on newspaper sales and Clarke (1974), Cass and Shashis (1974), Ward (1974) and see Clarke (1974), for a critique of the literature; Shashis (1974), for a more newspaperly oriented discussion) are interested in determining how much of an impact advertising at one point in time has on sales in future periods. The problem naturally is posed in the opposite way, i.e., sales at time t are related with families of advertising expenditures in periods 1 through $t-1$. Twelve forms of distributed lag models are typically fitted to aggregate data of advertising expenditures and sales. The models also take into account other important variables (e.g., competitive activity). The research in this area is mostly technical, dealing with complicated mathematical issues required to obtain unbiased estimates of advertising impact (Shashis 1974).

Second are the studies on advertising demand. Appel (1971), Janssen (1974), Jucker and Shashis (1974), Craig, Marshall and Lashin (1974), Green and Jackson (1974), Greenberg and Nelson (1974). These studies measure demand and elasticity as a function of advertising. They show that the relationship between ad revenue and population has an inverted shape. Initially, population tends to increase demand, until some saturation level is reached. With

immediate repetition, relative decline in the longer run may be related to the advertising. Advertising effectiveness is also expected to follow the same pattern. The objective of this research is to determine optimal advertising schedules, i.e., the optimal length of a flight, the optimal spacing of advertisements, the optimal number of different executions needed, and so on.

Third, there are the studies that compare how advertising is remembered over time (Goldman 1970; Eichen 1970; Eichen and Berry 1981). These studies, too, were motivated by a desire to develop optimal advertising schedules (e.g., to time or not).

The thrust of the proposed research is different. The interest here is in the responses that individuals generate upon exposure to advertisements, and how these responses affect opinions over time. Unlike the research by Eichen (1970; Eichen and Berry 1981), the present research focuses not just on recall, but also on the different types of cognitive responses that the individuals generate. The importance of understanding the relationship between individual responses and advertising effects as a function of time is underscored by a recent review of the delay effects literature (Gawyer and Ward 1981). In their review, Gawyer and Ward note that not much is known about the delayed

effects of advertising, particularly at the level of the individual. Questions about the mediating and moderating conditions that affect the durability of advertising effects remain unanswered. Yet, only an understanding of the processes that mediate the long-range effects of advertising can provide insights about the long-term impact of an advertisement at the copy-testing stage.

Examination of the cognitive response literature (the dominant stream of research within marketing that deals with individual responses to advertising, and their effects on consumer judgment) highlights the absence of studies to date which (see Appendix A). Though a number of studies, using the cognitive response methodology, have examined the effects of a variety of factors on individual responses to advertising and the relationship with advertising effectiveness (Heath 1981, 1983; Rajch and Jain 1981; Carr and Weinberg 1981; Carr and MacKenzie 1981; Laro, MacKenzie and Rajch 1981; MacKenzie and Laro 1981; Morris and Glass 1981; Glass, Day and Bower 1978, 1981; Day 1981; Wilson and Underhoughs 1981; Appendix A identifies the most important factors studied), not a single study has monitored the generalizability of these findings over time.

Moreover, in the general context of persuasion research, only two studies (MacKenzie 1981; Calfee, Jain

and Tansill (1970) have examined the generalizability of the relationship between individual responses to a persuasive message and attitude change over time. The conditions under which these three test studies were conducted are far removed from the advertising setting, and their results cannot be directly extended to advertising (a detailed discussion is presented in a later chapter). The point is that even these 3 basic studies have demonstrated the impact of important independent variables on individual responses to advertising and attitude change, but not one of them has examined the relationship over time.

It is the purpose of the present research to examine how individuals respond to advertising and how these responses affect attitudes over time. In addition, recent research suggests that the processes underlying advertising effectiveness are contingent on the consumer's ability to process information (Petty and Cacioppo, 1981). Thus, the role of prior knowledge, a factor believed to affect processing ability and the nature of individual responses, is examined.

Memory and Advertising Effectiveness

Research on the processes underlying advertising's impact on consumer attitudes and choice suggests that there exist a number of ways in which advertising can affect consumer

decision. Traditionally, theory for attitude formation and cognitive responses to an advertisement have been considered as reflections of an attitude. Recently, a number of alternative formulations of how advertising works have been advanced. For example, for COTR, Ferguson (1984), and more recently Kahn and Jay (1984) have suggested that under involvement, behavior precedes attitude change. Taking a different perspective, more and Robinson (1981, 1983) have extended the ideas originally advanced by Zajonc (1961) to the advertising domain by suggesting that brand name familiarity is a reflection of brand attitude under certain circumstances. Thus the processes underlying advertising effects are influenced by a variety of factors (e.g., exposure, individual characteristics). The focus of this research is limited to ad exposure situations characterized by at least a moderately high level of involvement. In such situations, it is expected that theory for the advertising message and cognitive responses to the ad are important antecedents of brand attitude. In the next section, advertising theory and cognitive responses in support of this proposition are briefly discussed.

The Advertising-Attitude

Theories of how advertising works posit that some form of external learning is a necessary step in the

communication process. For example, the old ship addition experiment, knowledge, liking, preference, new fiction, and purchase, proposed by Levinge and Shallice (1981) makes meaning and knowledge a required first step in the process through which advertising works.

Models such as AIDA (Attention, Interest, Desire, and Action), DUBIAS (Dullay 1981), HADDER, and SPINTER (see Ervin and Sawyer 1978) also have as their basis a hierarchy-of-effects model.

A large body of empirical research provides support for the hypothesis:attitude--intention hierarchy. For example, research on attitude--intention attitude models (e.g., Lein 1973, 1979; McInerney 1984) has demonstrated that advertising can change brand attitudes by changing the beliefs associated with the brand.

Cognitive response studies provide further evidence for a relationship between attitude and intention. A series of studies have demonstrated that disapproving cognitive responses to an advertisement are strongly predictive of attitude change (e.g., Bagoz 1980, 1982; Wright 1973, 1976, 1983).

Thus, independent streams of research support the relationship between attitude and money, at least in situations that may be characterized as high in

integrating. Further, as mentioned earlier, the generalizability of the relationship between sensory and attitude over time has not received attention. To summarize, a key purpose of this research is to examine the nature of the relationship between recall, negative responses, and attitude.

In addition, this research seeks to contribute to our knowledge by providing a framework for partitioning negative responses into categories that qualitatively differ from each other. The relationship between these qualitatively different types of negative responses and brand attitude is studied.

In the next chapter, literature from marketing and psychology that examines the relationship between information retention and the persistence of attitude change will be reviewed. In Chapter Three, research on the susceptibility of different types of sensory traces is discussed, and a framework is provided for classifying individual responses to advertising into categories that (a) are important to predictors of attitude, and (b) reflect significant differences in decay rates. Chapter Four reviews the literature on the influence of prior knowledge on the processing of information, with a focus on advertising communication. In Chapter Five the research hypotheses are

presented. Chapter six presents the findings from several projects and Chapter seven deals with the research design. The results of the study are discussed in Chapter eight. In Chapter nine the implications of the research are documented.

CHAPTER TWO
THE RELATIONSHIP BETWEEN MESSAGE AND ATTITUDE CHANGE
OVER TIME: A REVIEW

Introduction

Recently, Jacob and Kelley (1981) considered time factors to be important for a comprehensive understanding of persuasion. The clock has not proven irrelevant, attending to a message and learning from it. The clock does not indicate various types of immediate attitude change, the generalization of attitude change to other behaviors, and the long-term persistence of attitude change. Many researchers have focused on the determinants of attitude change (e.g., Kahn, McInerney and Smith 1983; Petty, Cacioppo and Olszansky 1983). Recently, more researchers have focused on the generalization of attitude change to behavior (e.g., Fazio and Olson 1985; Ott and Deaneau 1985). However, there has been a dearth of research on the persistence of the effects of a persuasive message (see Ott and Fazio (1985), McGuire (1985), Jacob and Kelley (1985), and Kahn and Kahn (1985) have all noted the need for research on post-communication attitude in attitude

designs. Our knowledge of persuasion falls short of a thorough understanding of the conditions under which the effects of a persuasive message persist over time.

In this chapter, the literature on the persistence of the effects of a persuasive message is reviewed with a view toward understanding the relationship between persistence of persuasion and the retention of message information. First, a brief discussion of the early research on the relationship between attitude and cognition is presented. Second, three paragraphs on the relationship between attitude and cognition are considered, and the merit of each approach is evaluated in the light of empirical evidence. In the third and final sections of this chapter, a synthesis of the research findings is presented, and the expected contributions of this research are reviewed in the context of our current knowledge of the effects of a persuasive message over time. It is important to state at the onset that the research reviewed in this chapter is primarily from the psychology literature. The literature in marketing has not been deliberately excluded; rather, there simply exists a paucity of marketing-oriented research on delay effects.

Behavioral Perspectives

The study of the relationship between attitudes and cognition is not new (e.g., Oser, 1936). However, most scholars would agree that the impetus for the more recent research on the relationship between attitudes and cognition came from the seminal work of Hovland, Lumsden, and Bierbaum (1949). Based on their work on the effects of propaganda films on soldiers' attitudes and behaviors, Hovland and his colleagues presented four hypotheses which drew the foundation of persuasion research that is concerned with the attitude-cognition relationship ever since.

The most prominent of the four hypotheses, the dissonance-free hypothesis, was based on a less complex conceptualization of the persuasion process. The first involves learning the message, and the second involves associating the message with a cue (e.g., message source) that induces a person to accept or reject the message. The pattern of persistence/flexibility of attitude change depends on the nature of the preceding cue. The conceptualization of this approach came from paired-associate learning. Relative persistence is predicted under two conditions: first, when an acceptance cue is initially linked to a message and remains associated with it over time; and second, when a rejection cue initially associated with a message is

labor associated. Thus, the dissipation of a new skillset associated with a message may lead to either persistence or decay of initial skillset change depending on the nature of the work.

A second hypothesis advanced by the Berlin group was the "Berliner effect" hypothesis, which was based on Berliner's (1981) research on restructuring. Berlin and his associates posited that when messages include not only arguments in favor of a particular position but also some qualifications and reservations against the main argument, initial opinion change may be dampened due to recall of the qualifications. However, the qualifications would be forgotten more rapidly than the main arguments, and over time the impact of the message would be greater.

The "Berliner effect" hypothesis is specific to messages with qualifications. A more general hypothesis advanced by the Berlin group was the general conclusion-only hypothesis. Like the two preceding hypotheses, this hypothesis relies on differences in the decay rate of different parts of a message. The hypothesis posited that the general conclusion of the message persists in memory while the details are forgotten more rapidly. If unfavorable details are lost rapidly from

memory, the net impact of a message can be expressed in increments over time.

The decay hypothesis, the delayed-filtering-of-stimulus-information hypothesis, states that for complex messages the full impact of the message may not be apparent at the time of exposure. With the passage of time and exposure to new contexts in which the information becomes relevant, the initial implications of the message may become apparent. Thus, although initial learning will decay over time, some events, events, and periodic unsolicited modifications of the message may filter through. The delayed impact of the greatest modifications would affect the persistence of attitude change.

These four hypotheses have various underlying assumptions. All four hypotheses posit that (a) attitudes are a function of issue-relevant conditions available in memory at the time of delayed attitude judgment, and (b) elements of learned material decay over time. However, the hypotheses differ in terms of specifying which elements are retained over time and which elements are forgotten. The dissociation hypothesis is based on the more rapid forgetting (by 1970 or dissociation learned and what 1971) of the yielding cue. Typically, the yielding cue has been operationalized as the availability of the source

Holling and Greenwald 1979; Barnish and Marshfield 1980; Benninger, Cook and Grainger 1981; Norland and Nelson 1981; Nelson and Norland 1981). However, statements discussing the message structure of sl. 1979; Nelson 1981), statements assessing structure and intent repetition (Grainger et al. 1979, Expt. II, processing of persuasive intent (Gibbs and Holt 1979, and (Greenwald, Bartha and Holt 1979) have also been used as the discussing cue. In general, the yielding cue can be thought of as a contextual cue (i.e., a part of the message context) that affects the comprehension of the content of the message. This effect is lost over time due to greater forgetting of the context as compared to the content of the message.

The 'Marlboro effect' hypothesis and the general-conclusions-only hypothesis differ from the dissociation cue hypothesis. Instead of positing differences in forgetting rates between the context and the content of the persuasive communication, these two hypotheses posit differences in the forgetting rates for different elements of the message context. The 'Marlboro effect' hypothesis posits that qualifications of the main message are forgotten rapidly and the general-conclusions-only hypothesis posits that details of the message are forgotten but the message conclusion is remembered.

FINDING. The delayed-filtering-of-repeated-beliefs hypothesis suggests that evidence and details of the content of a persuasive message may be recognized with the passage of time, and these too could influence attitudinal judgment.

Because the four hypotheses predict that the persistence of attitude change is contingent on the duration of a message available in memory at the time of attitudinal judgment, it is important to determine explicitly those aspects of a message that are both retained over time and are germane as predictors of attitude. For this reason, the next section of the chapter is devoted to reviewing the literature on the relationship between retention of learning and the persistence of attitude change.

Retention of Learning and the Duration of Attitude Change

From the discussion of the four hypotheses presented above, three general propositions on the nature of the relationship between retention of learning and persistence of attitude change may be discerned. In short, the theoretical underpinnings of the long-term approach derive from learning theory. Therefore, in the next section it may be argued that persistence of attitude change is related to the retention of all message arguments. A consideration of the four hypotheses, however, reveals that

These views may be too simple. Indeed, all the hypotheses suggest that with the passage of time mind elements decay more rapidly than others. Therefore, the more stable elements (e.g., the reinforced images) increasingly important in the relationships of attitudes over time. This leads to a second perspective that holds that attitude change is related to the retention of elements of message details. However, even this perspective does not include a third element that underlies the Yale School approach: the notion of YIELDING or acceptance of the persuasive message. The importance of this component becomes clear from a careful scrutiny of the dual-systems model hypothesis. The hypothesis posits that persuasion is contingent on the nature of the yielding act. Empirical results (reviewed later in the chapter) show that the influence of a persuasive message is contingent on the nature of the act that leads to the acceptance/rejection of the message arguments. A third perspective, that incorporates the notion of yielding, suggests that attitude change is dependent on the receiver's cognitive processes and not on the message arguments (Lewin).

Researchers interested in the relationship between *memory* and *attitudes* over time have adopted one or the other of the three perspectives described above. In this

section, the research under each perspective is presented with a view towards describing our understanding of the relationship between memory and attitude over time. This paper has focused the form of this research and the conclusions it needs to take.

Selection of All Passage Arguments

The relationship between retention of all message details and persistence of attitude change has been studied using a number of different approaches. The results, taken together, do not provide strong evidence for a specific relationship.

Manipulation of the Degree of Initial Exposure

Jensen and Weisberg (1970) and Wilson and Miller (1968) manipulated the degree of initial learning by varying the number of exposures to a message. They found that repeated exposure facilitated persistence of attitude change. However, Spasswell (1961) manipulated learning by having subjects rehearse all message arguments focusing on or the other side of a proposition. A week later, each group remembered a larger number of the rehearsed arguments, but there was no corresponding difference in attitude change. The results are difficult to interpret. One possibility is that self-paced rehearsal of arguments is

different from repeated exposure. Repeated exposure had more led to subjects perceiving a message as convincing, (b) led to better characterisation in response to the same way during delayed measurement, or (c) led to deeper processing of the message (e.g., Craik and Lockhart (1972) made a distinction between depth of processing and rehearsal). Also, Wason's study used a within subject design and, therefore, subjects when responding a second time may have relied on retained prior evaluations. This latter possibility will be discussed later in more detail. Thus, it is premature to suggest a clear interpretation based on these results.

Direct manipulation of the amount of information learned

Though a number of studies have manipulated the amount of information learned (e.g., Calder, Deane and Randall (1974), Cook (1984), Eagly and Norton (1979), Metcal and Shimamura (1994), Brown (1974), Petty and Cacioppo (1980), only two of the studies have examined the generalisability of the effects over time. Calder, Deane and Randall (1974) varied the amount of learning by manipulating the number of exposures presented. Their study found that cognitive responses acquired in the same way as the amount of judgment. That is, when there was greater learning, the

judgment was more positive than, to the number of arguments recalled over time, or did the intensity of the judgment.

Wattles and Rogers (1980) also manipulated the number of arguments presented and found that positive persuasion was enhanced in the presence of more arguments, and the decrease in attitude change associated over time.

Whatever be the research findings, there is a basic problem with this approach. An increase in the number of arguments may affect the persuasiveness of a message because of an increase in the credibility of the message, or due to a mere size effect, or due to increased message retention; hence, the data are not amenable to a single interpretation. In fact, more recent research by Petty and Cacioppo (1980) confirms these speculations. Among other things, Petty and Cacioppo (1980) manipulated the number of arguments, the quality of the arguments, and the level of involvement. They found that under low involvement, subjects were swayed by the sheer number of arguments presented independent of the quality of the arguments. They concluded that the number of arguments acted as a piling on over which subjects were not paying attention to the content of the message.

Detection of stimuli and resulting skin conductance

A few studies have examined the relationship between retention of information and persistence of autonomic change. Holland, Lindsley and Sheffield (1958) measured recall of message segments five days or nine weeks after subjects were exposed to a propaganda film, using a free recall. They found that retention was about 80% after nine weeks compared to five days after exposure. However, the epidermal conductance did not reflect perceptible trends. Of the fifteen epidermal measures reported, seven showed a decrease over nine weeks while the remaining eight showed an increase.

Miller and Goughan (1958) examined the stimulus-response relationship over time using a Red design. Subjects heard two sides of the argument from a jury trial, either consecutively or a week apart. Epidermal and retention were measured immediately or a week after exposure to the second side of the message. Order of presentation was randomized. Based on the negatively accelerated decay curve, they predicted the greatest advantage for message two, i.e., the side of the testimony heard second, when the stimulus was presented a week apart and measurement immediately followed the second message. They predicted the least advantage for message two when

the messages were presented sequentially with delayed assessment. The data suggested that immediate, delayed, & correlatedly assessed indicated a strong positive correlation between the act amount of descriptive information recalled and available in the immediate assessment condition but not in the delayed assessment condition. In the latter, a negative correlation was obtained. Thus, these results are consistent with respect to the relationship between recall and available.

The lack of description between available and recall is also evident from the data reported by Papagno et al. (1991). Papagno et al. assessed retention and available change immediately after, 2 days, 7 days, or 30 days after exposure to a message. Though the retention data corresponded to the classical forgetting curve, the available change scores did not related in the same way.

Evidence consistent with these findings is reported in the marketing literature by Lichtenstein and Shull (1991). They found that when subjects were exposed to an advertisement with available information to form an evaluation of the advertised product, the relationship between available and recall was almost nonexistent. While recall decayed sharply (75%) over a delay of ten days, available did not.

by, Singer and Strong (1970) briefly summarized what data on the recall of advertising and brand attitudes for multiple exposures (ii) of advertising over time. They noted that brand name recall decayed with time without exception, but for attitude measures, the loss of decay was quite pronounced.

Wells and Strong (1969) report results inconsistent with the findings presented above. They examined time trends for four elements of the message: conclusion or side taken, message topic, message source, and message argument -- as well as attitude change. Their results show that attitudes are functionally dependent on the arguments that originally induced attitude change. Subjects who retained more arguments showed greater attitude change, both one week and six weeks after exposure. The findings of Chaiken, Deane and Todorik (1970) reported earlier also support the functional dependence of attitudes on argument retention.

Once again the results are inconsistent. The studies (1969) = functional dependence of the persistence of attitude change on message argument recall, but four other studies failed to find such a relationship. This inconsistency will be discussed in detail in Chapter Three.

In sum, frequency of exposure and amount of information have been found to affect the persistence of attitude change; however, inconsistent results and the possibility of alternative explanations suggest caution in drawing any conclusions. Also, correlational data from mass-based experiments are inconclusive. It seems, therefore, that the persistence of attitude change is likely to be related to the repetition of the message in some complex way.

Consequently, the result-attitude curve has been found rather elusive. After all, there is no reason to expect all the items to be equally persuasive. It is possible that weighted recall of the message elements is more directly related to attitude than the past research would indicate. Also, the logarithmic model underlying the attempt to predict variation with the number of items recalled is an additive model. Finally, an averaging model is more appropriate (see Robinson, Cooper and Levin 1971). The first point is taken up next, and a discussion of the second is deferred to a later chapter.

RELATIONSHIP OF SPECIFIC ELEMENTS OF A MESSAGE

In short, there is no simple relationship between message recall and either positive attitude change or the persistence of attitude change. Yet, as Cook and

Roberts' (1970) work, it is implausible to assume that insertion, broadly defined, is unrelated to attitude change and its persistence. One possibility is that relations of specific aspects of a persuasive message are crucial for attitude change and its persistence. This section examines whether recall of any particular aspect of the message is important for the retention of attitude change.

Definition of the goal and the hypotheses

The importance of predicting the goal or conclusion of a message for the persistence of attitude change, flows directly from two of the hypotheses advanced by Berkus, Lindholm and Sheffield (1974). They are (a) the "Marshall effect" hypothesis and (b) the goal-conclusion-only hypothesis. The "Marshall effect" hypothesis posits that for messages that contain not only arguments advancing a particular position but also some qualifications and reservations against the main argument, initial attitude change may be shaped due to recall of the qualifications. However, the qualifications would be forgotten more rapidly than the main arguments. Hence, over time the impact of the message would be greater.

Only one study has explicitly tested the "Marshall effect" hypothesis. Forrester's (1968) presented

subjects with a message, along with a qualification. He measured retention of the message and attitude change immediately after, 2 days, 14 days, or 41 days after exposure. Though decay of memory for the message and the qualification were associated with expectations, the decay curve for attitude change was not. Thus, no direct support for this hypothesis is available.

The general-ambivalence-only hypothesis is more general. It predicts that the general ambivalence of the positions addressed in a message are retained, and it is these memory traces that drive attitude over time.

Evidence: For the hypothesis of retaining the gist or the retention of a message for the persistence of attitude change comes from a number of sources. For instance, Weiss and Weigert (1966) found the persistence of attitude change to be functionally dependent on the retention of the message verbatim or idea level.

Cook and Levin (1968) examined the effect of experimentally manipulating the retention of the time of recall on attitude persistence. Their results show an increase persistence of attitudes for those subjects who had the retention manipulated.

Cook and Weiswirth (1971) and subjects listen to a tape-recorded message. With manipulation the retention of some of

seven hints. Attitude measures (disgust) were administered immediately, one week, and six weeks after exposure. Findings were found to persist for those subjects who heard the conclusion seven hints and had received social support for the conclusion, but not for subjects who had not received social support.

With CFTI reports that retention of message conclusion is critical for the persistence of attitude change, at least when subjects improve their own exposure.

Finally, a large body of literature on depression formation (Davies 1980; Lewis, Debus, Lerner, Goss and Baumgardner 1978; Myer, Hull and Gordon 1978; and others) is also consistent with these findings. The results of these studies are discussed in Chapter Three.

It seems, therefore, that under certain circumstances the retention of the gist or the message conclusion facilitates persistence of attitude change.

The Descriptive-Op. hypothesis

Both the perspective that posits that persistence of attitude change is a function of the retention of all message details, and the perspective that posits that the persistence of attitude change is a function of the retention of specific aspects of the message, seem to have had limited success in clarifying the relationship between attitude

and equilibria over time. The former perspective is the most established and has received very limited support. The latter perspective provides a somewhat more sophisticated view, and although the results of empirical studies are more encouraging, they are inconclusive.

One problem that could be at the root of this failure to obtain a relationship between memory and attitude is the manner in which the persuasion process is conceptualized. Underlying the work of Festina and his colleagues was a two-factor theory of persuasion. The first step involved message learning, and the second step involved connecting the message to a cue that caused the respondent to yield to it. This perspective is embodied in the dissociation-cue hypothesis.

Based on the two-factor conceptualization, a complex pattern of results may be predicted over time. When the respondent can associate the OPPOSEDNESS of the message (e.g., an expert source), can associate a high degree of initial attitude change but rapid decay over time as the cue is forgotten or dissociated from the content of the message. When the respondent can associate the message with a positive cue, one expects little or no initial attitude change due to the non-acceptance of the message argument. However, as the subject can be forgiven or dissociated from the message

over time, a situation develops in which the countervailing forces are at work. The dissipation of the net leads to positive planning and, therefore, a tendency for decrease in attitude change. None of the original message, however, has also been forgotten and, therefore, the impact on attitudes will have declined. Thus, depending on the relative strength of the two forces, attitude change over time may increase or decrease at a rate slower than in a condition in which the same message was paired with a positive reinforcement cue.

A brief look at the literature shows that the entire range of results have been observed. For example, based on the preliminary results obtained by Levine², Lussier³ and Hartfield (1961), where experiments were designed to provide a strong test of the discreditation hypothesis, Levine and Weiss (1955) manipulated the credibility of the source of a persuasive message, with the source acting as the discreditation/justification cue. The results showed that messages from high-credibility sources led to an initial attitude change far exceeding the attitude change produced by messages from a low-credibility source. However, after a delay of four weeks, the initial attitude change had declined by approximately 50% for messages from high-

availability sources, while volatility change had increased for messages from low-availability sources. In fact, volatility change for messages paired with low-availability sources had increased to the greatest level of volatility change for messages paired with high-availability sources.

Wells (1993) had subjects learn a message that was or was not linked to a brief statement that described the message. Wells found relatively less change of volatility change when the describing was not learned compared to when it was not. Wells did not find an absolute increase in volatility change.

Deane and Berman (1988) had subjects learn messages from high-availability, low-availability, and neutral sources. The source was or was not reinforced at the time of delayed testing two weeks later. In the absence of source reinforcement at the time of delayed testing, the data reflect the pattern obtained by Deane and Wells (1988). When the source was reinforced, however, neither the increase in volatility change in the low-availability condition nor the decrease in volatility change in the high-availability condition was observed. Deane and Berman (1988) extended the two-factor conceptualization of the previous studies referred to earlier from these data and tested the firm discriminability hypothesis in

refer to the process of first assimilating and then discriminating integration/rejection from a message. Thus, on the occasion Cleveland and Weiss (1951), Salovey and Berkman (1952) attitudes increased but on a third (Cohen 1955) is decreased. The logic underlying the pattern of results is clearly demonstrated by Salovey and Berkman (1951). Since these early studies, several studies have been conducted (Cook and Cohen 1944; Gillig and Greenwald 1971; Gerdner, Cook, Bernstein, Fine, Kincaid and Salovey 1978; Brown and Bernstein 1974; Bernstein, Cook and Gerdner 1974; Schuman and Berzel 1975; Salovey and Bell 1975; Salovey and Belzire 1976) which report a similar kind of findings.

The results suggest that message learning, in and of itself, is not sufficient. The message has to be accepted. The URM perspective, which is discussed next, takes this position.

Message-cried thought

This perspective holds that the underlying process that leads learning and attitude change is the thoughts generated by the message upon exposure to the communication. The thoughts may be related to the message content, or they may be produced completely unconsciously by the receiver. Essentially, the perspective takes a broader view of learning and includes message-cried

thoughts as indicators of attitude change. In this section, the research using message-evoked thoughts is briefly discussed.

When one thinks of message-evoked thoughts, the notion of counterarguments and support arguments leap to one's mind. In the discussion below, a very broad perspective is adopted. All the different types of thoughts which occur at the time of exposure to a persuasive message are considered under the general umbrella of message-evoked thoughts.

Though the explicit measurement of interpretative responses was introduced only in 1966 by Greenwald (1966), the importance of such thoughts has been longingly recognized for some time (Dorland, Combs and Sheffield 1959; Dorland, Davis and Miller 1959; Weiss 1959). As noted earlier, the delayed-following-of-copying-interpretations hypothesis posits that, for complex messages, the full impact of the message may not be registered at the time of exposure. With the passage of time and exposure to new materials in which the information becomes relevant, the latent implications of the message may become apparent. The realization of the latent implications results from cognitive activity. Thus, there is an implicit acknowledgment of cognitive responses as indicators of the attitude change

process. This becomes evident when one considers the statistical evaluation of this hypothesis.

Wolfe (1966) presented subjects with sets of three epistemically related propositions that is, two of the propositions stated positions on a pair of issues, expressed with words which would logically imply agreement with the stand taken on the third issue. The three propositions making up a triad appeared in different parts of a questionnaire, interspersed with the propositions of other triads. In the first experimental session, subjects were asked to indicate the extent of their agreement with each proposition. In the second session, a week later, counterfactuals were presented that argued in favor of one of the positions from each triad. Subjects' agreement with the propositions was again measured after exposure to the counterfactual. In the third session, a week after the the second session, subjects' agreement to the propositions was again measured. The results showed that subjects' opinions on related but unmentioned issues changed over a delay of one week when they were confronted with a counterfactual change on a target issue, though no delay on the mentioned issues was observed immediately after counterfactual exposure.

The work of Tesser and his colleagues (Gaffner and Tesser 1973; Tesser 1974; Tesser and Gaffner 1975; Tesser and Green 1976, 1977; Tesser and Lerner 1977) is also pertinent. They found that subjects who were placed in situations that encouraged them to think about the attitude issue (e.g., Tesser 1974; Tesser and Lerner 1977) or provided an opportunity to think about the issue (e.g., Gaffner and Tesser 1973; Tesser and Gaffner 1975; Tesser and Green 1977) exhibited greater polarization of attitude change compared to subjects who in such situations, were importantly, they found that providing subjects with more time to think about an issue led to greater attitude polarization (Gaffner and Tesser 1973; Tesser 1974; Tesser and Gaffner 1975; Tesser and Green 1977).

Delayed attitude effects which support the "filter" hypothesis also came from the work of Hartmann, Ems and Solomon (1970) on prejudice reduction through self-insight. They found that for complex anti-prejudice messages there was an attitude change immediately following exposure, though there was a significant increase several weeks later. Thus, although the individual's cognitive responses that caused a polarization of beliefs were not measured, it is clear that the existence of negative valency in response to message exposure is implicit in these

research approaches. In fact, Tesser explicitly argues that attitude polarization results from thinking about the issue. The research on cognitive dissonance, balance theory, etc., also allows useful comparisons (see Byrne (1980) for a discussion of this point).

The literature also shows that the importance of cognitive responses has been long recognized. It was not until Greenwald (1968), however, that these responses were directly measured. Following his introduction, the practice of measuring cognitive responses directly became popular both in marketing (e.g., Beach 1961, 1963; Carr and Babinoff 1963; Nelson, Berman and Perreault 1965; Dwyer and Bush 1965; Wright 1971, 1974, 1975; Tuck and Baumgartner 1974) and in social psychology (e.g., Givner, Tesser and Tesser 1975; Elliot and Greenwald 1975; Petty and Cacioppo 1978, 1981). In general, these studies found a statistically significant relationship between cognitive responses and attitude under a variety of situations (see Appendix A). Unfortunately, most of the marketing studies have studied the relationship between attitude and cognitive responses *after* the act, and only two studies in social psychology have studied this relationship.

In one of the studies, conducted by Greenwald (1968), subjects received an opinion poll, after which a

message was presented in printed form. Each message contained three arguments. Following each argument were four blank lines provided for the subject to write a free response provided in the main point of the paragraph. This procedure served to obtain a sample of cognitive responses rehearsed during the persuasion situation. After the communication, subjects' reactions were again assessed using a thought-listing procedure. A second message was also administered. One week later, again, and thought administration occurred once again administered. Analysis of the data revealed that cognitive responses identified as support arguments and counterarguments were more strongly correlated with attitude than measures of message recall both immediately and after a delay of one week.

Gaider, Ennis and Gendall (1974) report the results of the only other study that has studied the cognitive response-judgment relationship over time. In that study, subjects heard defense and prosecution arguments from a legal case. Measures of subjects' cognitive responses and attitude were recorded either immediately after, ten weeks after, or two weeks afterword. Cognitive responses coded as internally-organized, personally-affected, and reason-generated were again found to be strongly correlated with judgment in

the immediate and delay conditions. These two studies are discussed in more detail in Chapter Three. For the present, it is important to note that although both studies found a strong positively biased cognitive response and attitudes over time, the results cannot simply be generalized to the marketing context.

There are a number of reasons for this. First, Grosswald (1988) used a repeated measures design, as noted earlier, introducing concerns like the results of later measures (Lehrmanstein and Gould 1991). Second, the method of cognitive response elicitation used by Grosswald was problematic. He required subjects to write down a one sentence reaction at the end of each paragraph of the message. The measurement procedure is likely to have made the subjects think about the message more deeply and provide a meaningful and "intelligent" response. Such responses may not have occurred naturally, i.e., in the absence of instructions to write down their reactions after each paragraph of the message. Third, Golder, Inman and Tansik (1991) utilized a between-subjects design. They explicitly informed the subjects, prior to the presentation of the stimuli, that they would be required to answer the information to be presented and use it to make a judgment when they returned for the second stimulus. These

instructions are likely to have influenced the subjects' processing strategies as well as provided them to rehearse the arguments during the intervening delay. Fourth, both studies used topics that were far removed from marketing. Thus, the results of these studies cannot simply be generalized to the marketing context.

There are two other points of interest. First, Cialdini and his associates did not find that negative responses were superior to neutral or positive or vicarious. Therefore, their study does not support the contention that negative responses are more strongly associated with attitudes over time. Second, none of the studies discussed here differentiated types of negative responses (such as that or which types are more or less important in influencing attitudes at different periods in time).

Summary and Conclusions

The literature reviewed in this chapter shows that we still do not have a very good understanding of the effects of a persuasive message over time. Although it is generally agreed that attitudes at any point in time are a function of attitude-relevant cognitions available to memory at that time (see Russell and Stewart 1969; Berk 1979; Haindl and Eisenberg 1980 for a recent articulation of this belief),

The empirical findings have not been very strong. Three perspectives have been provided in the research and the results have been mixed. A few studies have shown that persistence of attitude change is related to the retention of old message beliefs. However, many other studies have failed to find such a relationship. Some studies have found a relationship between the retention of message beliefs (e.g., the associations) and persistence of attitude change, but still others have not. Finally, some have argued that the persistence of attitude change is related to the retention of an individual's cognitive response to the message rather than the message arguments (Jensen). Only two studies in the latter tradition have examined the nature of the attitude-cognitive response relationship over time. Although these two studies did find significant correlations between cognitive responses and attitudes over time, their results cannot be generalized to the advertising context for several reasons.

In view of this, it becomes important to examine the relationship between memory and attitude change over time in a systematic manner. This thesis attempts to provide just such a systematic investigation. The research seeks to take old conclusions (First), the research examines whether recall of information presented as an ad and cognitive

responses generated to responses to an ad predict attitudes over time. Second, a coding scheme for negative responses is developed that categorizes responses into categories that are (i) important to predictors of attitudes and (ii) differentially sensitive to the effects of time. It is hoped that this scheme will permit more accurate predictions of brand attitudes, particularly after a delay. Third, it examines the recall of message components responses to negative responses as a predictor of immediate and delayed attitudes. Fourth, a number of conventional measures of recall and cognitive responses are evaluated to determine the conventional measure that best predicts brand attitudes. Fifth, the effect of prior knowledge and availability of information on recalling brands in the cognition-attitude link is examined. Finally, this study seeks to evaluate the generalizability of the findings from social psychology between memory and attitudes to the advertising context.

Given these objectives, the first step is to develop a coding scheme that partitions the negative responses to an advertisement into a set of categories that are differentially sensitive to the effects of time. In Chapter Three a framework is developed, based on the literature on the retrievability of memory traces, that enables memory for advertisements to be classified into a

set of categories that (a) reflect different ways of forgetting, and (b) are useful as measures of ability.

CHAPTER THREE
ANTHODROMY OF ATTITUDE: A FRAMEWORK FOR
THE EXPLANATION OF BELIEF CHANGES

Introduction

The literature reviewed in Chapter Two suggests that the persistence of thoughts generated upon exposure to an advertisement is important for the persistence of attitude change. Though evidence is less conclusive, the retention of message elements was also found to affect the persistence of attitude change.

To examine the relationship between the negative antecedents of attitude and the persistence of attitude change, the negative antecedents need to be partitioned into categories that reflect differential sensitivity to time. In this chapter, such a scheme is developed. First, the controversy concerning the relationship between first recall and attitude is discussed. A case is made for the inclusion of items recalled from an advertising message as an antecedent of brand attitude because it (a) appears to be a good predictor of attitudes under certain circumstances, and

of facts are forgotten rapidly. Second, negative response categories are identified that are so different in their stability over time, and (3) interpreted as evidence of attitude.

THEORY AND DATA

Relationships between Post Recall and Attitude

The literature suggests that the relationship between post recall and attitude judgments is inconclusive. Many researchers working with very different paradigms have failed to find a relationship between post recalled and attitude (Smith 1960, 1964; Smith and Lutz 1964; Berman, Fisher and Smith 1970; Grossman 1970; Lockman 1970; Rapp and Garolago 1970; Miller 1967; Wright 1971, 1974, 1975). Lockman (1970) reports on the results of seven proprietary marketing studies (of the 18 studies reported, seven were marketing studies). He found that not one study reported a significant relationship between attitude and post recall. The studies included experiments as well as surveys, single and multiple exposure designs, cheap and expensive products, new and established products, and females as well as non-females.

Recently, Liberman and Brail (1981) have shown that when advertisements are viewed with the objective of getting an evaluation, the correlation between post recall

and attitudes in mind and tends to become further attenuated over time.

The cognitive response literature is overwhelmingly consistent in the failure to find a relationship between fact recall and attitude judgments. In fact, Greenwald (1968) suggested a shift of perspective from fact recall in cognitive response measures of the failure of past researchers to create a relationship between recall and attitude. Since then, researchers in marketing who have used the cognitive response methodology (e.g., Babin 1989, Mittl-Wagner 1979, 1978, 1976) have replicated Greenwald's (1968) finding, i.e., the lack of a significant relationship between recall and attitude but a strong relationship between cognitive responses and attitude. The results have been replicated using different types of advertisements (e.g., news versus entertainment, corporate versus non-corporate), different media (TV, radio, and print), different levels of repetition, different products (cognitive food, beverages, and clothing), and different levels of involvement.

The weak relationship between memory for specific facts and judgments is also supported by research in social cognition. Anderson and School (1982) presented subjects with trait adjectives in an impression-formation situation.

Their results show a strong primary effect in impression formation but a large recency effect in recall. They concluded from this that impressions and memory for traits were independently stored and accessed in memory. Ashton, Plake and Smith (1984) report a study in which they replicated these effects. They found that temporal delays had a strong effect on recall but a small effect on evaluative judgment.

Though a large number of studies have failed to find a relationship between attitude and recall, the issue is far from closed. A number of researchers, also having very different orientations, have reported large and significant correlations between recall and judgment (Fazio & Johnson, a summary of the findings). Hapel (1971) presented data from a survey of Dutch households that provides evidence supporting a recall-attitude relationship. However, the were readers or non-readers of a women's magazine (*Margriet*), were interviewed. Participants were asked to mark through a list of ten words containing brand names and to identify those for which they had seen advertisements in the magazine. They were then asked to recall the elements of the advertisements. Next, the advertisements were shown to the participants and they were asked to indicate their intent to buy. Those who claimed

That they would definitely buy were given an order form to fill out. The results showed that those who recalled the advertisements were twice as likely to buy the products advertised (products advertised ranged from coffee and breakfast cereals to a tape recorder).

In a telephone survey, participants ($N = 591$) were first asked about brand names and buying intention for a list of products. One product was the Little House Soap which had been advertised only in Marginal, and not in any other weekly magazine. Results show that non-readers of Marginal and those who did not recall the advertisement were much less likely to indicate an intention-to-buy (approximately 25 indicated intent) compared to those who read Marginal and recalled the advertisement (75 indicated intent). Though these results are consistent with a learning theory based explanation of the relationship between recall and attitude, the interpretation is open to question because of two reasons. First, alternative explanations based on familiarity (Gajda 1988; Stern and Robinson 1981, 1989; Shuman 1981) and brand loyalty are possible. Second, the design utilized does not rule out the possibility of direct effects.

Fisher and Harvey (1984) report data from a telephone survey of 798 respondents regarding recall of political

advertisements for the 1952 gubernatorial elections in Iowa. Among other things, they found recall of ad claims to be strongly related to voting behavior. Of particular interest in the finding that recall of arguments from the non-purchased candidate's commercial was highly associated with voting behavior. The significance of the latter finding is discussed later).

Wells and McGuire (1954, see Chapter Two for a description of the study) compared the recall time trends for the number of message arguments recalled with attitude time trends. They concluded that attitudes are functionally dependent on the recall of message arguments. Fisher, Isaacs and Tinsell (1974) found that recall time, i.e., a value constructed by dividing the number of defense arguments recalled by the total number of arguments recalled (prosecution and defense arguments), correlated with judgment and, more importantly, the correlations were as large as those between negative expression and judgment. This study was conducted as a simulated jury trial, see Chapter Two.

In another study, see in the context of a jury trial, Byrne, Thompson and Ross (1981) report a strong correlation (0.60) between recall time and judgment.

Etting and Chakravarti (1984, 1985) examined the relationship between brand choice and the accessibility of information in memory. Based on their findings, Etting and Chakravarti concluded that choice was contingent on information accessibility.

Berman et al. (1988) had subjects read detailed factual information about an upcoming football game and then asked for their judgment as to which of the two teams would win. Results showed that recall time was significantly correlated with judgment. The results of this study are discussed in more detail in the next section.

Finally, advertising practitioners have long relied on recall as a measure of ad effectiveness (e.g., Gross and Wallace 1981; Thompson 1981, and the Federal Trade Commission often relies on recall tests to determine how informative advertising is and also might influence a product market).

Clearly, the issue is complex, and a simplistic statement that recall is or is not related to judgment would be inaccurate. One useful approach is to consider the studies that report significant correlations between recall and judgment with those that do not (see table 2.1).

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ANALYSIS OF REGIONAL EFFECTS ON THE SOCIAL-ECONOMIC RELATIONSHIP

Category	Sub-category	Value	Unit	Year	Source
Total	1990	100	%	1990	100
	1991	100	%	1991	100
	1992	100	%	1992	100
Total	1990	100	%	1990	100
	1991	100	%	1991	100
	1992	100	%	1992	100

Author(s) & Year	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Watts & Muller 1994	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Green 1992	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ward 1971	Ass.	F of exp.	Dependent variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98		

TABLE 2.3 CONTENTS

III	= Overview
III.1	= Correlation analysis
+	= Positive information only
+	= Negative information only
0	= Neutral
0	= None

Conceptual and epistemological issues

Initial thoughts. The immediate conceptualization of the persuasive process (Ossola 1981; Ross 1976), which underlies the perspective adopted here, requires that recognition of a persuasive message (a) learn the message arguments, and (b) accept or yield to the message arguments. One of the major reasons for not finding a relationship between recall and attitude change is that recall reflects learning of the message (the first stage) but not necessarily acceptance (the second stage). For example, a person may have that an advertisement for Brand X claimed that it had Feature Y but not believe it and, therefore, not accept it (a), not yield to it. Studies that have not measured acceptance of the recalled elements (e.g., Kahn 1981, 1982) generally fail to find a correlation between recall and attitude. Studies that do not measure believability but report a relationship between recall and attitude change are studies that have used messages in which each argument was convincing, and hence each argument learned was likely to be spontaneously associated with a yielding response. For example, Kahn and McGinnis (1976) presented subjects with a four paragraph (700 word) message that contained three arguments supporting a position. The first paragraph

introduced the topic and stated that the communicator favored the topic. Each subsequent paragraph was devoted to developing in detail one of the three arguments. The messages were written authoritatively, with frequent citations of facts and figures bearing on the point. Calder, Deane and Bartoll (1974) presented subjects with a set of propositions and defined arguments elaborated from a real man. Each argument consisted of the testimony of one witness to the trial. Clearly, these studies used messages that were likely to lead to spontaneous identification with a particular one as the argument was learned. Thus, in these studies recall was likely to reflect not only material that had been learned but also accepted. Not surprisingly, the studies report a significant relationship between recall and persistence of attitude change. The distinction being made here is analogous to the distinction between knowing that I said I was characteristic Y and believing that I possess characteristic Y--a distinction stressed by Flavell and Aries (1976).

Argument weight: A point, there is no reason to believe that all message arguments are equally important. Yet, many if not most studies treat all the presented arguments alike. It is not surprising that these studies also

fail to find a relationship between recall and attitude. Two studies that report a significant relationship between judgment and recall (Seyou, Thompson and Bruce 1980; Sherman et al. 1981) are also critical for their use of a weighted recall statistic. Seyou, Thompson and Bruce (1980) suggested that the use of a preferential recall index may be more appropriate than an unweighted mean. They distinguished between positive (P) and negative (N) evaluations and computed the ratio of the positive evaluations recalled to the total number of evaluations recalled $[P/(P+N)]$. This index was then correlated with judgment. Sherman et al. (1981) used a slightly different index. They had subjects weight each element of recall on a four-point scale that indicated the importance to the final judgment. Next, the number of positive elements recalled about items one and two (in working memory would translate in repeating protocol) was computed. Finally, a weighted sum of the positive items recalled about item one $[W_1]$ plus the weighted sum of the positive items recalled about item two was not long but $[W_2]$ was computed $[W_1/(W_1+W_2)]$ and associated with the probability of item one choosing. This latter ratio is a more sensitive index for relating recall to judgment than 1980.

IMPACTION OF PRIOR JUDGMENT. Using the facts that a person recalls about an object to predict whether witnesses heard that object assumes that the person uses the recalled facts to make the judgment. Though this may be true in any circumstance, attention is drawn to prior judgments which, e.g., in repeat purchase situations or in situations where the information was presented in an evaluative mode of the type of initial learning, such as an acceptance may be overruled. When prior judgments have been made and are available to memory, people may simply retrieve the stored overall evaluation and use it to make the judgment instead of reapplying an overall evaluation based on the retrieved facts.

Evidence for this comes from the replicated work of Sherman et al. (1982) and Leonesio and Drull (1982). Sherman et al. (1982) presented subjects with detailed factual information about two football teams that were pitted against each other in a sporting game. Some subjects were told to read the information with a view toward explaining a hypothetical victory by one team or another (factual condition). Other subjects were not told about an evaluation task prior to reading the material. Some of these subjects were given a factual and better-worse condition and others were given an impression and better-impression task.

Subjects in the latter two conditions were told about the explanation task after reading the material. The results show that recall time is correlated with judgment (R=.91). However, the correlations varied significantly across conditions. The correlations were large and significant in the before (R=.91) and after-reading (R=.81) conditions but not for the after-explanation condition, where the zero correlation was only .03%. The authors propose that in the latter condition, subjects were retrieving their prior judgments (which were evident in memory) and not bothering to re-examine the details.

Similar results are reported by Liebowitz and Drull (1984). In that study, subjects saw an advertisement and were either told that they were to evaluate the product or they were to check the advertisement and comment on how grammatical, coherent, and interesting it was. The results indicate that across positive, negative, and neutral advertisements and immediate or delayed assessments, the correlation between the evaluative implications of reading and judgment ranged from .644 to .871. In the condition in which subjects were required to check the advertisements for errors in construction, in the condition in which the subjects were given an evaluation task, the correlations were weak and/or ranged from as low as .011 to a

reviewers of L.J.L. Press, these investigations show that in the absence of a prior evaluation, the evaluative implications of the details recalled experimentally affective judgment. However, when prior overall evaluations are available, people tend to use the retrieved evaluation rather than reconstructing a new evaluation based on the retrieved facts.

These results are consistent with the recent theorizing of Burke and Wark (1984). Burke and Wark propose that the way in which information is processed or stored, i.e., in an evaluative mode (they refer to it as on-line) or a learning mode (they refer to it as study), is the key determinant of whether recalled facts are predictive of judgments or not. When information is processed in an evaluative mode, retrieved facts are not predictive of judgments. When information is simply stored in memory, information retrieved at the time of situational judgment is predictive of the judgment.

Limitations of range. Burke and Burke (1984) have suggested that the failure to find a correlation between recall and judgment may be due to problems associated with range restriction. They argue that in many experimental investigations, researchers use a few arguments and scenarios subjects to pay close attention to the arguments. This tends to induce a high and relatively

lowest-level level of description. Therefore, the within-cell correlation often used to examine the reception-perception link may be distorted by restriction of range of the recall variable.

RECAUSALITY REVISITED. Finally, it is not clear what is meant by *ad recall*. Advertising researchers have used the term *recall* in different ways. For instance, Craig, Marshall and Lavie (1970), Moore and Schiffman (1981, 1984), Day, Inman and Darling (1970), and Engel (1970) have compared the recall of brand name to attitude ratings. Engel (1971), Engel, Liberman and Engel (1970), Engel and Darling (1970), Wright (1973, 1975, 1977) have compared copy recall to attitude. Surely, these differences in the operationalization of the recall variable have implications for the recall-attitude relationship. In fact, even the theories underlying these two operationalizations are different. The expectation that brand name recall will predict attitudes is based on the familiar hypothesis (e.g., 1978, see also Moore and Schiffman 1981, 1984), the expectation that copy recall predicts attitudes is based on Learning theory—an approach pioneered by the Yale School (e.g., Bettman, Beale and Kelley 1978).

Thus, it seems that the differences in the findings of prior research may arise from differences in (a) the operational nature of fact recall tasks, and (b) the way information is presented at encoding. In this research, a number of different operational measures are compared. The alternative measures considered are developed on the basis of the profiling dimension. The comparison should permit the identification of the operational measure of fact recall that best predicts attitudes. Also, the impact of the availability of prior overall evaluations on the recall-attitude relationship is examined.

AVAILABILITY OF RELEVANT INFORMATION

In his review, Rossini (1981) suggested that recall of facts may be important in predictions of attitudes in situations in which the consumer has little direct competing evidence available to him/her. Support for this stems from the work of Bick and Lutz (1981), Bickel and Chakravarti (1981), Shugart et al. (1981), and Peter and Storer (1984). Bick and Lutz (1981) compared the effectiveness of impulsive and non-impulsive decision-making. The finding of interest is that recall number of items recalled correlated with attitude for those exposed to the impulsive version of the ad but not for those exposed to the non-impulsive version.

Kunda and Changizi (1990) presented subjects with a brief a scenario story and then manipulated learning so as to cause differences in responsibility. In one trial earlier, choice was found to be contingent on information availability. However in 2), (1980) presented information in the football issues once again, detailed information was available against which the subject to be evaluated could be compared. The next trials for Fisher and Harvey (1981). In fact, they report a strong correlation between recall of facts from the non-preferred candidate's commercial and voting behavior, thus providing direct support for KDA argument.

It is interesting to note the similarity between this argument and the recent theorizing of Johnson (1981). Johnson was interested in understanding how consumers make choice across non-comparable alternatives (e.g., a Slovic and a potato). He found that when alternatives were non-comparable, consumers used abstract dimensions (e.g., abstractness) along which the alternatives were comparable to make the evaluation. For example, when comparing a Slovic with a potato, the abstract dimension enjoyed under usefulness may be used. Now compare this situation to situations in which the consumer compares two or more comparable alternatives but possesses detailed

Information is only one. In such situations, details for one brand are available in memory or retrievable, but only abstractions are available in memory for the others. This availability of different kinds of information leads to "noncomparability," and the consumer may be forced to move to the level of abstractions of the information stored in memory to make a judgment. If so, it is hardly surprising that recall tends to correlate with judgments in those studies in which information on multiple objects (brands) was not presented. Most advertising studies and the studies from social psychology that have been cited deal with a single brand/object.

There is the advertising variant, too. One aspect recall is correlated with situations when comparable information on competing brands is available. Such situations occur when comparative advertising is used, or when comparative advertising information about competing entries is used, or when with information on available information at the time of decision making in the form of package labels and/or in-store displays.

In this research, the impact of the availability of comparative information on the recall-attitude relationship is examined by experimentally manipulating the availability

of cooperative brand information (product manipulation). The details of the manipulation are presented in Chapter Seven.

Summary

Thus, under certain circumstances, recall can be expected to play an important role as predictor of ethical/moral judgment. In this research, a number of the issues raised are assessed. First, alternative operational measures of recall would not be considered to determine what is the best predictor of brand attitude. Second, the impact of the availability of information on cooperative brands on the recall-attitude relationship is assessed by experimentally manipulating information availability. Third, the availability of prior recall associations on the recall-attitude relationship is assessed. Fourth, the stability of the recall-attitude relationship over time is investigated.

Implications/Researcher's Take-Home

Having reviewed the literature dealing with the relationship between attitude and recall, the next topic of importance, from the perspective of this research, is the pattern of decay exhibited by coin-recall.

A large literature dealing back to Atkinson has assessed the decay pattern of coin-recall. The basic finding has been that coin-recall declines exponentially. Bart and Jorrell (1988) report the first advertising

study on forgetting. They paired product-class labels with distinctive brand names and presented subjects with a list of 100 product-class-brand name pairs at a four second rate, for ten learning trials. Following the list-learning trials, subjects were given a short, randomized & random subset of twenty product-class labels and asked to write down the corresponding brand name next to each. Five lists of twenty brand names each were created from the total pool of 100. Subjects were randomly assigned to five groups. Each group received a different subset of twenty names. Subjects were required to attend four more sessions, a week apart. At each session the same brief (small) set of brand names corresponding to product-class name) was administered, but with a different list. All subjects, therefore, attempted to recall the 100 items, but at different points in time. The data were scored for the number of correct responses at each point in time. The results were consistent with expectations. Recall declined sharply in the first week, followed by a more gradual decline.

More recently, data from a number of administering studies have shown a similar pattern (Craig, Shusterman and Merrill 1978; Green and Williams 1980; Lichtenstein and Fischhoff 1980; Einhorn and Neely 1980). Einhorn and Neely (1980)

report aggregate data on the effects of a variety of ways of scheduling the same number of rehearsing points on serial recall. Five different rehearsal schedules were compared. Though the different schedules have different implications for working memory in different situations, one thing is clear: once rehearsing stops, serial recall of the advertisement starts to decline sharply.

In a second laboratory investigation of memory/forgetting (Brug, Bower, and Leavell 1974), subjects were shown a set of twelve print advertisements for five seconds each for either seven, fourteen, or twenty-one repetitions. Serial and random recall, one day, a week, or four weeks after, the results show an exponential decay in recall of brand names. In the random nonmarketed condition, over ten advertisements were recalled across all three repetition conditions. Between five and six brand names were recalled a week later depending on the level of repetition, and declined further after 28 days to an low as three brand names.

Finally, Lieberman and Jacob (1980) report similar results data for unfamiliar and affectively positive, negative, and neutral print advertisements. They found that across the different types of advertisements, recall declined by 75% over an interval of 48 hours. Thus, the

traditional forgetting curves for extensive stimulation also holds for abstracting stimuli, i.e., average recall is forgotten exponentially.

Second curve law of recall after time

Conceptually, *second* law is a function of three elements: encoding, storage, and retrieval. One factor which influences the likelihood that a memory trace will be recalled at a later point in time, therefore, is the "age" at which it is encoded. Also, given that a fact has been encoded and stored, the likelihood of its being retrieved at a later time is contingent on the nature of the cues available at retrieval. Both hypotheses have been extended to the literature and a number of empirical investigations speak to this issue.

A number of researchers (Gardner, 1965; and Lohr 1988; Bower and Bower 1971; Spear-Beck and Levin 1984) have extended or modified/extended explanations of what elements are more likely to be remembered. They argue that information associated with a person's schema or information that is in some way related attracts greater attention and, therefore, is processed more thoroughly (e.g., Bower and Bower 1971). In support of this line of reasoning, they provide data that shows that when the stimulus and response are related or

overall information, these pieces of information are more likely to be recalled in a recall test administered immediately after stimulus exposure.

Another group of researchers (Christie 1989; Grossman et al. 1989; Grossman, Serfaty, and Sawyer 1979; Lingis et al. 1979; Smith and Grossman 1980) have provided a retrieval-based explanation of the type of information that is *retrieved*. They argue that at the time of retrieval some salient cues (e.g., themes) are initially retrieved and these cues in guide recall. This is consistent with Bartlett's (1932) conclusion that, over time, the gist or a frame remains that serves to guide recall. Along with a retrieval-based explanation, and given that observations and overall evaluations are salient memory traces akin to the theme, one would expect information consistent with observations and overall evaluations, to be preferentially retrieved.

Grossman and his colleagues report results that support this position. They assessed memory for information that is either consistent or inconsistent with respect to a behavioral script (e.g., going to a restaurant). They found that when cued with memory for descriptions of familiar behavioral episodes containing irrelevant information was assessed after a delay, subjects' recall patterns contained increasing proportions of script consistent items. In addition, they

found that in the immediate assessment condition irrelevant information is recalled better. For their results, Brown and his colleagues have provided an integrated explanation. They suggest that in encoding irrelevant information is processed more deeply and, therefore, recalled better when assessment immediately follows. However, after a delay there was no retrieval cue to facilitate the recall of irrelevant information but there was recall cue for the relevant information and, hence, relevant information is recalled better than irrelevant information.

A different finding was obtained in a recent study by Ling et al. (1991). They provided subjects with brief descriptions of stimuli. Half the stimuli were relevant to the occupational judgment task, e.g., engineers, the other half were relevant to a second occupational judgment (e.g., physicians). Subjects were then asked to make an occupational-reliability-judgment (e.g., how reliable the person was for a career as a physician) and then made a reliability-judgment either immediately after the occupational-reliability-judgment or a week later about their subjects had a superior memory for occupational judgment relevant stimuli up to a week later. Earlier (1981) reports similar results. Subjects were better

this to remember judgment-consistent trials compared to judgment-inconsistent trials--both immediately after and 24 hours after exposure to the stimulus episodes.

Though these latter two studies support the idea that details consistent with abstract interpretations and overall conclusions are better remembered, they do not show any systematic differences in the type of recall over time. That is, contrary to expectation, the proportion of consistent elements recalled does not increase over delay. One possible explanation could be that both these studies required subjects to make an immediate judgment immediately after exposure to the brief descriptions, and this explicit task could have led to initial biases in processing (see Shanteau et al., 1981, for an examination of this issue). In the absence of such explicit tasks, the evidence suggests, it is likely that the hypothesized polarization would have emerged.

In sum, memory recall appears to function asymmetrically. In addition, forgetting appears to occur in a biased manner, i.e., details consistent with the gist or theme are preferentially retained while inconsistent details are forgotten. Thus, given that fact-recall is important as a predictor of attitudes and it is sensitive to delay, it should

be included as one of the subtypes of cognitive of behavior in this study.

In the next section, idiosyncratic cognitive responses are considered and a framework for coding cognitive responses into categories that are felt important as predictors of attitude and felt differentially sensitive to being manipulated.

The Cognitive Response Approach

The cognitive response school has been a dominant force within marketing, consumer behavior, and social psychology in the study of persuasion. The approach, pioneered by Osgood (1955), has been used to study the effects of a variety of factors on individual responses to advertising and attitude change.

Wright (1971, 1974, 1978) introduced the approach to marketing researchers in a study designed to examine the effects of level/amount and ratio on message-evoked thoughts and attitude change. Subsequently, the approach has been used to examine the effects of source credibility (Barnett, Baskin and Lewis 1974; Burt, Baskin and Thomas 1980; Fels and Glass-Gale 1981), message structure (Burt 1981, 1982), distribution (Gale et al. 1984), repetition (Burt 1981, 1982; Burt and Gale 1981; Gale and Barnett 1980), prior knowledge (Burt) and

Macdonald 1979; Lutz, Macdonald and Belch 1981, compare rate (Lutz, Macdonald and Macdonald 1981), comparison advertising (Belch 1981, 1983; Belch and Lutz 1983; Lutz and Weinberg 1983; Wilson and Macdonald 1983), and station-based-on-advertising (Lutz and Day 1983, 1985; Lutz, Macdonald and Belch 1985).

Most of these studies, starting with Wright (1975), have relied on a thought-identification scheme that partitions responses into counterarguments (CA), support arguments (SA), source derogation (SD), and contrary thoughts (CT), or some scheme closely resembling it. Some of the more recent studies have developed extensions of this scheme. For example, Belch (1981, 1983; Belch and Lutz 1981) located two categories to capture repetition-related thoughts. Belch and Day (1981) were interested in the effects of continued responses to an advertisement, and included three categories for coding continued responses. Lutz and Macdonald (1980) extended on Wright's (1975) scheme by categorizing thoughts according to their target (opinion, manufacturer, product, or idea), source of support, and valence (positive or negative). In addition, they located categories to tap "nonrelated" (Duncan 1980) and emotion-related thoughts.

Though all these schemes are useful, their value is tied to the research objectives. Deane's scheme may be especially pertinent in studies concerned with repetition, and Bates and Bay's (1969) scheme may be useful for those interested in the effects of attractiveness with emotional appeals. For researchers interested in the prediction of violation, the simple but useful scheme--CB, BB, BB, and CBB may suffice. The point is that the cognitive response approach provides a flexible methodology. The researcher can adopt the technique to the problem when he is addressing by developing a set of categories that identify and discriminate between the types of thoughts of particular relevance to the research question at hand. In the present context, the point is in delay affecting therefore, the set of categories to be used in analyzing the relationship between cognitive responses and attitudes should be especially sensitive to delay, and should include categories that are important determinants of attitudinal judgments made after a delay.

As mentioned in Chapter Two, only two prior studies have examined the effects of time within a cognitive response framework: Grossman (1964) and Gabor, Insko and Serfaty (1974). Grossman (1964) examined the relationship between cognitive responses, participation in RA and CB, and attitude change over

a delay of one week (the study is described in Chapter Two). We found a significant correlation between negative responses and attitude change in both the immediate and delayed conditions. Given the exploratory nature of their research, Grosswiler (1980) cannot aim to demonstrate that negative responses were predictive of attitude change over time. He was not concerned with fluctuating between thoughts that were differentially sensitive to delay or those that affected attitudes differently in the immediate and delayed conditions.

Gilder, Deane and Bandell (1974) were interested in examining the relationship between different types of thoughts and attitude change over time. In their study, conducted in the context of a jury trial, they measured negative responses into three categories: externally-originated, person-attributed, and person-questioned. In accordance with the theorizing of Grosswiler (1981), they expected that person-questioned thoughts would be most predictive of attitudes over time, and externally-originated thoughts would be least predictive. The prediction is based on the premise that externally-originated thoughts, person-attributed, and person-questioned thoughts reflect progressively increasing amounts of assimilation. The literature suggests that assimilated thoughts are more

results (Cohen and Leinhardt 1975; Cohen and Tversky 1976) and were predictive of attitudes (principles of higher-order dominance, Greenwald and Leavitt 1984). The results of the study, however, failed to support the hypothesis. Person-generated thoughts were the least strongly associated with attitude in both the immediate and delayed test conditions. There were no significant differences between the other two categories. Finally, the contents of all three categories showed a significant decline in valence over delay. Because the paper does not report data on the rate of decline for each category, no inferences about relative persistence are possible.

Therefore, the scheme used by Greenwald (1980) (a) and (b) is not suited for the present purpose. The scheme used by Cohen, Isaac and Tversky (1974) (internally-originated thoughts, parent-modified thoughts, and parent-generated thoughts) is conceptually suited for the study of delay attitudes; however, the empirical results failed to validate the scheme. Thus, neither framework is useful in the present context. However, there is reason to believe that there are differences in the relationship between different types of cognitions and attitudes over time. To summarize, the purpose of the proposed research is to examine (i) the content of responses to advertising and the factors that

influence their context, and (3) how the relationship between attitude and responses of different context might change over time.

Cognitive Research

Research in the cognitive response tradition does not provide a framework that is tailored for the analysis of delay effects in advertising. The research in cognitive psychology and social cognition, however, provides valuable directions toward developing an appropriate typology of thoughts.

In developing a categorization scheme it would be useful to know what makes a memory trace more or less accessible than another. Unfortunately, no clear answer exists. Craik and Lockhart (1972), by studying the forms of memory research from a structural to a process oriented view, posited that accessibility was a function of the depth of processing. They argued that (1) accessibility increases as depth increases; (2) there are qualitative differences between the traces produced at different levels; (3) levels vary along a memory-accessible continuum. Craik and Lockhart (1972) presented data from studies using the lexical decision paradigm (see and Dechen 1984; see also 1987; Dechen 1991 and Shoben's Listening (Dechen 1986) to support their theory.

A number of criticisms have been leveled at the steps of processing perspective Chubbey (1976; Broadbent 1977 a, b; Kersh, Broadbent and Treisman 1977; Nelson 1977), leading to a reformulation of "select" as degree of elaboration (Ovick and Treisman 1977). The view that retrievability is a function of the degree of cognitive elaboration argues that as memory traces become organized in more and more elements in memory, their retrievability increases (Ovick and Treisman 1977). Treisman stated, more highly elaborated elements in memory have a larger number of pathways by which they may be retrieved.

Joshy and Ovick (1979) have proposed that retrievability is a function of distinctiveness. Memory traces that have more distinctive features will be more easily retrievable at a later point in time. Thus, as remember that Neil Armstrong was the first man on the moon, but not of an exact remember the others who followed. In the marketplace, products vie with each other for distinctiveness—the so called unique selling proposition—to be more accessible to the consumer.

The point is that retrievability is determined in many and varied ways. It is not possible to present a single, unambiguously elegant scheme that can classify the range of responses to advertising in terms of their relative

unreliability. Although a conceptually elegant coding scheme is not possible, at least with our present knowledge, the literature does suggest integration of thoughts that have consistently shown differences in temporal stability across a large number of studies. In the remainder of this chapter the literature in cognitive psychology and social cognition is reviewed and a number of integration of cognitions are identified that are (a) important as predictors of attitudes, and (b) reflect different functioning roles.

A Framework for the Cognitive Antecedents of Attitudes

In this section, the coding scheme for the cognitive antecedents of attitudes is developed. First, the categories of thought related thoughts are described. For each category, the literature pertaining to their roles and importance in attitude formation is discussed. Second, a test is made for the inclusion of each result as a predictor of attitudes. The studies which have tested the relationship between each result and attitudes are reviewed, and a number of circumstances are identified under which results are expected to be predictive of attitudes. Finally, the categorization scheme described here is compared to the scheme proposed by Wright (1971) with a view towards relating the new scheme to the earlier work.

Interpretation

It has been widely recognized that persuasion depends on the way people interpret information. The hierarchy-of-effects model of advertising effectiveness (Lavidge and Macneil 1943), for instance, recognizes awareness and knowledge (necessarily interpreted or interpreted as associated) steps preceding attitude formation and consumer action. In the communication literature, Berland, Leshman and Sheffield (1974, p. 870) report that interpretation of facts correlated with opinion over time. In his classic exposition on the nature of the persuasion process, McGuire (1968) has argued that comprehension (which requires interpretation) is a critical requirement for persuasion to occur. Greenwald (1988) echoed this contention by stating that it is the message-recipients' cognitive processes, that reflect the message-recipients' interpretation of the message, and not only recall that reflects attitude change. Last but not least, Eagar (1990) has demonstrated that persuasion is dependent on the comprehension of a persuasive message¹.

The literature on the interpretation of advertising (Festinger 1944; Berda 1977; Berda, Melinsky, Feshy, El Jarnas and Laros 1984; Jansky and Soper 1984; Jansky, Wilson and Soper 1984; Davis and Johnson 1984; Olson 1984; Brown 1984; Brown and Belchuck 1984; Ship and Brown

1970, and more generally, contextual discourse (Frederiksen 1979; Galanter and Klatzky 1979; Garfield and Glaser 1979; Kieras and Woods 1979; Kieras and van Dijk 1979; Mueller and Johnson 1979). Thorpeyke (1978) suggests that in the process of interpretation, we generate a variety of inferences (certain types of cognitive responses) to give meaning to the text-learned material. These inferences, referred to as interpretive inferences, are so produced reflexively and without conscious effort (Galanter and Klatzky 1979; Winer and Wiman 1981). In general, it would not be incorrect to argue that these inferences represent the meaning a person takes away from the message and, therefore, are important as predictors of attitude. In the following sections, three categories of interpretive inferences are identified that show different rates of forgetting. The three categories satisfy the criteria for inclusion in the coding scheme because they (a) are important as predictors of attitude, and (b) reflect different forgetting rates.

Single-Site Interpretations: The simplest type of interpretive inferences are single-site interpretations. These inferences reflect the message recipient deriving from a single piece of information. For example, an advertisement for a well-known store may claim that

Brandt (1978) (1980). The message conveys that we interpret this method best as "Brandt is right." Operational definitions of the content of the category single-word interpretations and other categories identified in this chapter are to be found in Appendix B.

A number of studies have documented the production and temporal characteristics of single-word interpretations. Kline and Ellis (1984) found that, as a proportion of the total number of cognitions produced, single-word interpretations increased over time. A similar finding has been reported by Frederiksen (1979).

Though the proportion of single-word interpretations increases over time, the absolute number does not increase. The increase in proportion is due to the faster decay of dual (Frederiksen 1979).

The research also shows that the production of single-word interpretations is influenced by the processing set and rate of presentation (Kline and Ellis 1984; Frederiksen 1979). More single-word interpretations are produced when information is processed under an evaluative processing set and when the rate of presentation is high. Thus, in the advertising context, often characterized by an evaluative processing set and a fast pace of presentation (e.g., Radio and TV), single-word interpretations are likely to be produced.

There is some evidence that to suggest that dissonance information is produced while processing advertisements. Though it is not clear whether they play a role in individual judgments, this category of thoughts should be monitored as they form a significant part of our memory after a delay and, therefore, are potentially important as predictors of delayed attitude.

Abstracts. A second and very important class of interpretive inferences is abstractions. As their name suggests, these are abstract representations and may be derived from one or a combination of a number of cues. They represent the memory or gist of more detailed information. The importance of such thoughts for the persistence of attitude change has been recognized as far back as early 1940s (see Forster, Lumsden and Macfie) (1941, p. 274-28).

Abstractions have been discussed in the marketing literature (Kies and GIL 1984; Burke, Mowton and Shaulis 1984; Jensen 1984; Kassar, Olson and Day 1984; Tybout and Shaver 1981), the communication literature (Forster, Lumsden and Macfie) (1941), the memory literature (e.g., Erickson and Van Dijk 1978; Kassar 1981; Christensen 1980; Arns and Berkman 1980), and in research on impression formation (e.g., Hastorf and Markus

1971; Elliot and Shoben 1971; Ling's, Goss, Nelson, Leppa and Baumgartner 1971).

Working researchers have only recently turned their attention to this class of inferences. Only three studies have assessed the production of inferences in the context of processing propositional information. Bruck, Mitchell and Shoben (1979) report that consumers produce abstractions in the process of assessing extrinsic information on package labels. However, their study did not consider temporal effects and, therefore, did not shed any light on how these inferences behave over time. Johnson's (1981) study does not speak to this issue either.

Lisa and Wier (1984) assessed the temporal stability of abstractions. They found that Lisa single-run label-relationships, the proportion of abstractions increased over a delay of approximately one week.

In the communication literature, Bryman, Lundstedt and Sherry's (1988, p. 274-8) recognized the importance of abstractions. They point out the importance of interpretation of facts and then begin their study with the degree of abstractness affecting temporal stability. They first judge words the received items for the degree of abstractness, and then tracked the deep functions for items

with different degrees of abstractness. Though their results are not presented because of the poor reliability of the coding procedure, they do report that the more abstract thoughts persisted and the less abstract thoughts dropped over time.

In addition, a significant body of psychological research suggests that abstractions form stable memory traces. In his classic work on remembering, Bartlett (1932) found that over time the gist of a folk tale persisted while details were forgotten. The gist that persisted may be considered an analogous to abstract information because both represent memory information. Work by English, Redstone and Gillies (1980) on the comprehension of prose also showed little decline in subject's ability to recognize the gist of a passage even when 80% of the details were forgotten over a delay of three days.

More recently, Horvath and van Dijk (1978) presented a model of text comprehension that integrates much of the earlier work. They suggest that textual information passes both a microstructure, i.e., the structure relating individual propositions to each other, and a macrostructure, i.e., the structure that relates the entire discourse to its theme. Related to the global and microstructures are corresponding plans and

misrepresentations. The latter are similar to abstract interpretations. Eklund and van Dijk (1988) proposed that misrepresentations form stable mental traces. The original test of these traces shows that misrepresentations are about five times more accessible than abstract propositions after a delay of three weeks. These results are consistent with the work of Thorngate (1977) and Mueller and Adams (1977).

Miller, Perry and Cunningham (1977) provide further evidence supporting the greater stability of abstract interpretations. These researchers took a 1940 word passage and identified the superordinate (one and two subordinate ideas) for each paragraph. Note the similarity among abstract interpretations, misrepresentations, and superordinate ideas: they represent summary information. The testee judges the identified ideas from about a high degree of agreement (85%). Subjects were required to read the passage and then respond to a multiplication-recognition test either immediately after or two days later. Results show that there was a significant decline in recognition scores for subordinate ideas over the delay interval but not for the superordinate ideas.

Orthofonsson (1981) reports a study concerned with the retrievability of four types of information in a delayed recall

character, paragraph level, sentence level, and sentence writing. These elements may be observed, from the most abstract to the most specific detail. Using a forced-choice task, memory for each type of information was tested after an interval of one week, one month, or two months. Consistent with past research, the data show that more abstract concepts are better remembered. Further, the study did not find differences in memory rates. This departs from the findings of past researchers in relationship to the type of task used in the study, and to not of course to the present context.

Secondly, Nelson (1971) has presented an analysis of some data that show how, within the laboratory and in our daily interactions, we produce observations in detail which remain in our memory. He compared the testimony of John Dean, former witness to President Nixon, with the statements tapes. The analysis shows that although Dean's testimony about specific conversations and events was quite accurate, his testimony was accurate in the abstract. That is, it accurately reflected what was happened. An additional characteristic of observations that emerge is that they are somewhat details regarding multiple episodes. Thus, abstract interpretations seem to be a useful class of questions to consider in the psychology

context, as product information is typically acquired through multiple exposures to advertising and other stimuli.

The memory literature, then, provides strong evidence suggesting that distractions from ambient memory traces that persist over time.

Finally, research in social cognition provides yet another line of convergent evidence. This research deals with the way we form impressions about others. Ash (1946) conceptualized an impression as an unified gestalt that gives meaning to and provides correspondences among individual characteristics. Oakes and Hastorf (1977) view impressions as the formation of prototypes that develop out of stimulus cues or experiences when those cues converge on a common concept. These definitions of impressions are consistent with the conceptualization of distractions presented here.

A large literature on person perception has developed over the years (e.g., Asch 1946; Burnstein and Smith 1970; Oakes and Hastorf 1977; Devine 1979; Lingle et al. 1979; Smith 1980; Wyer, Jr. and Srull 1980; and Hastorf 1980; to name but a few). Of special interest here are the papers by Lingle et al. (1979) and Devine (1980), because they examined the persistence of impressions over time. Lingle et al. (1979) had subjects evaluate the believability of a person for a particular occupation (e.g., mechanical hand) as a

train descriptions (e.g., fast moving) and found that subjects remembered their perceptions about a stimulus precisely (reliability for a particular description with a very high degree of accuracy, both one day and a week after the initial impression was formed). These results suggest that initial impressions (observational) form stable memory traces.

Carlson (1988) had subjects read a description of a person that had implications for both a favorable (e.g., kind) and an unfavorable trait (e.g., dishonest). Note that there are obvious interpretations of the descriptive characteristics. Subjects then rated the person with respect to one of the traits (e.g., dishonest). In a later task subjects were required to recall their ratings. Carlson (1988) found that subjects could recall their rating, over a delay of one week, with a mean error of less than half a scale point on a seven-point scale.

Probably a more interesting and important finding reported by Carlson (1988), at least for the purposes of this research, is that observations (i.e., trait judgments) play an important role in the judgment process. In the second session of his study, subjects were required to rate the person along the second trait (for example, a person who had initially rated the target person along the dishonest trait was required to rate the target person along

the dichotomous truth in the second session). The results indicate that these later judgments were consistently biased in the direction of their first judgment, independently of the direct implications of the original behavioral information.

Spur, Hull, and Gordon (1984) presented subjects with vignettes describing a particular personality trait in a person, and then estimated the likelihood that the person would exhibit behaviors consistent with the described trait and a second trait. At a later time, subjects made truth judgments with respect to the second trait. The latter judgment was biased toward the implications of earlier judgments. Thus, recollection of the stimulus material, stored in memory, is important for subsequent judgments.

The impressionism literature provides convergent evidence. The general-construct-only hypothesis (Mowlem, Lamborne, and Shaffer's 1978) posits that the recollection of the message or the gist persists in memory and is important as a predictor of attitudes later on in time. As noted in Chapter Ten, a number of studies have tested this hypothesis and found the retention of attitude change to be dependent on the retention of the gist or the construction of the message.

Good and Deane 1988; Good and Waters 1989; Waters 1991; Wells and Wells 1990).

Taken together, the literature provides an impressive amount of evidence that suggests that abstract interpretations (a) are extremely stable memory traces, and (b) are important as predictors of attitude. Indeed, interpretations, therefore, serve as the second category of thought in the coding scheme.

Overall Evaluations. Overall evaluations are the highest level of abstraction. As a continuum of abstraction, single-use interpretations reflect the lowest level, and overall evaluations anchor the opposite end. This special case of an abstract interpretation, therefore, is expected to be more stable than other abstract interpretations.

The importance of overall evaluations in the judgment process has been documented by researchers in advertising and social psychology (see also the discussion earlier in this chapter). Singh and others (1990) report three studies designed to evaluate the role of prior evaluations for subsequent memory-based judgments. They found evidence consistent with a judgment reversal effect. That is, subjects retained their earlier evaluations and used them to make new judgments rather than recompute an evaluation from the specific details available in memory.

In other words, Sherman et al. (1981) have obtained similar results. They found that subjects who had formed an evaluation of the size they were exposed to the stimulus information tended to rely on their overall evaluation when asked to make a judgment at a later point in time. Subjects relied on earlier judgments even though they were able to retrieve specific details relevant to the judgment.

In the advertising literature, Lichtenstein and Fischhoff (1980) have obtained similar results. They found that subjects' overall scores correlated with their attitude scores when a prior evaluation was available, however, the relationship vanished. Lichtenstein and Fischhoff (1980) explained their results by arguing that when subjects have a prior evaluation stored in memory it is easier for them to retrieve it and use it in making the new judgment rather than computing a new evaluation. This judgment retrieval model is consistent with McGuire's (1968) "layer organization" view of the processing of a persuasive message.

It was, overall, conclusions appear to form subcategory ratings memory traces and are important as predictors of attitudes.

Introspection

In addition to recall of information that somewhat reflects the meaning of a message, people often intrude unrelated information into their recall. This may occur as a result of pragmatic inference processes or due to errors of suppression and/or reconstruction. Intrusive pragmatic inferences and constructions appear even in the presence of interpretation and elaboration. Reconstructive errors occur during recall and result from the use of a theme to fill in missing details. Some intrusions are memories that are increasingly recalled as facts, when in reality no beliefs that intrusions influence attitudes judgments just as memories related facts do.

This section has three parts. First, the literature is advertising that provides some evidence (although weak) that such errors occur as a result of all exposure is retained. Second, studies from psychology is reviewed that suggests that intrusions are generated in a variety of situations and are more prominent after a delay. Third, the generalizations that emerge are discussed. The reader should note that the distinction between intrusions resulting from pragmatic inferential processes, reconstructive processes, and reconstructive processes is being ignored deliberately. This is because the purpose here is to show that [a]

intrusions across occur during the processing of advertisements. On the occasion of intrusions consumers will like, and (ii) intrusions are likely to affect evaluation judgments, especially after a delay. Thus, the distinction is not directly relevant. Now, as will become clear from the description in Chapter Seven, the research methodology used does not permit me to differentiate between the different types of intrusions.

Frasconi (1965) and Frazer and Babinchak (1971) analyzed some of the earliest research on the misinterpretation of advertising. In the Frazer and Babinchak (1971) study, subjects were asked to read 32 messages. After each message, they were required to indicate which statements from a set of five statements about the ad-claim were accurate, and which statements were inaccurate. Frazer and Babinchak found that subjects consistently labeled logically correct but grammatically logical statements as being accurate in 68% of the cases.

More recently, a series of studies by Harris and his colleagues (Green and Harris 1980; Harris 1979; Harris, Debusky and Thompson 1971; Harris et al. 1980; Rosen and Edgar 1980) have further examined the prediction of intrusions in the advertising context. Harris (1979) presented subjects with a set of 30 advertising messages for

conflicting brands of a variety of products. Both the subjects were given a message that said an explicit claim (e.g., if you use Clave mouthwash, it will keep your friends from avoiding you), the other half gave a claim that left the claim implicit (e.g., if you use your best friends are avoiding you, use Clave, the concluded with a difference. Both the inference that using Clave will make you more popular is not mentioned in the message, and has to be logically implied. However, it is pragmatically implied. Subjects were required to read the messages and indicate the accuracy of a set of statements about each message. In the implicit-message condition, the set included logically derived but pragmatically implied statements (e.g., using Clave will keep your friends from avoiding you). The results showed that subjects were as likely to rate the pragmatically implied statements as being true as the implicit claim condition as they were in the explicit claim condition. Earlier results have also reported by Harris, Oakley and Thompson (1971) and Harris and Harris (1972). In addition, Harris (1972) reports that there were no differences between the responses of subjects who heard the implicit message and those who heard the explicit message when asked to indicate their brand preference.

Finally, the research of Janovy and his associates (Janovy and Raper 1983, Janovy, Wilson and Raper 1988) also suggests that people incorrectly judge logically-false but pragmatically-accepted statements derived from a commercial as being correct.

These results suggest that people commit differentialia between logically true and false information from two messages when the false claims are pragmatically implied. In addition, Harris (1977) showed that a message that contained an implied claim had as much of an impact on the subjects' performance as did a similar message that explicitly asserted the same claim. Again, all the studies required subjects to indicate the accuracy of the claims. These results do not directly speak to the issue of whether the source-related business information inferences are automatically produced when processing the message or are a function of the response task used. It would be that the errors are due to a failure to discriminate between logically valid and invalid statements within the context of the experimental task. However, the large proportion of errors--Freeman and Susschek (1971) found 45.5% of the responses to be in error and Janovy and Raper (1983) found over 50% of the responses to be in error--suggests that these errors are likely to be made in the normal course of

comprehension. Also, the finding that indirect and directly recalled ciphers have an equivalent impact (Berlin 1950) is consistent with the assertion that indirect ciphers are often inferred under normal or exposure conditions.

Although the structuring studies provide associative evidence (because of the methodology used), evidence in psychology provides evidence that suggests that inferences are produced in the course of comprehending any communication and their frequency increases over time.

The current work in this area may be attributed to Berlin (1950). Berlin had subjects read a folk tale and then recall the story at different points in time. Five general results emerged from this work. He found that with delay, (a) memory traces become simplified through the omission of detail, (b) the plot or a coherent theme tends to persist, (c) recall is increasingly guided by the general theme (holorecited), (d) details that are consistent with the general theme tend to be recalled best, and (e) there is an increasing amount of error in recall. This last finding is of course here. It shows that inferences are produced and their frequency increases over time.

Following the pioneering work of Berlin (1950), the recognition of inferential errors has received con-

situation (eg., Arkes and Hoffman 1980; Christensen 1980; English et al. 1979; Kassin and Lee 1979; Lurie et al. 1979; Lurie and Palmer 1979; Davis, Ross and Black 1979; Snyder and Monson 1975; Diers 1980). In general, the data demonstrate that with the passage of time recall protocols contain increasing amounts of intrusions.

For example, Davis, Ross and Black (1979) had subjects read a story about the activities of a character who was worrying about an unwanted pregnancy. Experimental subjects knew what the character was worrying about and control subjects did not. A recall test, after a brief delay, showed that subjects in the experimental condition recalled more of the details in a manner consistent with the stress cue, the character worrying about the unwanted pregnancy.

Snyder and Monson (1975) had subjects read a biographical sketch of a woman. Either immediately after or one week later, some subjects learned that the woman was currently living a Jewish life style; others learned that she was currently living a heterosexual lifestyle; still others learned nothing about her current lifestyle. The impact of this information was assessed one week after reading the case history. Subjects

selectively affirmed answers that supported and bolstered their current interpretations.

Irwin and Hartman (1988) replicated and extended this research in the context of making a diagnosis. Subjects were shown eight symptoms, four of which were related to the Doctor's opinion and four of which were unrelated to the Doctor's opinion. Subjects were instructed to describe the conversation. They then responded to a two-line questionnaire beginning "If they had made a diagnosis immediately following the presentation, Subjects were administered a recognition task twelve days later. The task required subjects to rate each item (maintaining old items, new items related to the Doctor's opinion, and new unrelated items) as a match-point since indicating the criteria they were that they had or had not seen the item earlier. Subjects who had made a diagnosis were more confident that they had seen the new items related to the symptoms than they were of having seen items unrelated to the symptoms. There were no differences for the old items.

The propensity to overestimate identifiability unrelated items is also reported in the work of Granger and his colleagues (Granger, Boffa and Sawyer 1979; Granger, Will, Granger and Hall 1980; Hall and Granger 1981; see also the discussion earlier in this chapter).

Richard and van Rijn (1970) have assessed the effect of delay on intrusions. They report that immediately after reading a passage, approximately 25% of the propositions recalled by the subjects were intrusions. The proportion of intrusions increased to 28% and 44% after a delay of one month and three months, respectively. Csapik et al. (1971) also found intrusion errors to increase over a delay of two weeks. Subjects who had been exposed to a verbal description and had made impression judgments administered impression consistency tests to a recognition task. The extent of misrecognition increased over a delay of one week. Similar results are reported by Bule and Swelling (1970) and Swelling and Christensen (1971).

This increase in the number of intrusions is corroborated by Kim and Offe (1960). They presented subjects with a Verbalisatörische description of a car and then had subjects recall the description immediately after or after a delay of approximately ten days. They found only 11% of the attributions recalled in the immediate condition to be intrusions and 28% of the attributions recalled in the delayed assessment condition to be intrusions.

Finally, Spence (1966) provides an explanation for the increase in intrusions over time in presented subjects

with stories that were internally conflicting and showed that errors in recall (a) increased with time, and (b) distort facts in such a way that the elements of the story, as recalled, are consistent with each other. Sire (1981) reports that subjects who were instructed to think about and recall in the story (thus integrating the information with prior knowledge) produced more vivid intrusions than did subjects who were required to memorize the story.

Thus, a number of studies using widely different stimuli (from descriptions of family systems to automobiles and from short stories to single item descriptions), reading tasks (leading to diagnosis to memorization), and output tasks (recognition or recall) have found evidence for the occurrence of intrusions. The studies described are a small fraction of the studies dealing with intrusions. The particular studies described were chosen to highlight two characteristics of intrusions that are of special relevance here. First, the studies show that in some cases both intrusions and recall are guided by the summary or gist of the information required. Subjects increasingly recall or misremember information consistent with the gist for those or associated in having been seen previously (Sire and Barrows 1979; Anglin et al. 1979; Sire, Bar-

and Black 1953; Snyder and Monson 1974; Spivey 1980). Interactions are basically measures of more detailed information and, therefore, we would expect interactions to be associated with distinct interjections and overall evaluations. Indeed, the studies by Allen and Spivey (1981), Bartlett (1936), Fowler and Chaffin (1981), English, Hollings and Elliott (1975), Hinkle et al. (1980), Marshall and van Dijk (1978), and Salkin and Fowler (1984) show that with increasing delay the the number of interactions increases.

Thus, interactions can play an important role, particularly in delayed editorial judgment. The information contained here may or may not contain significant amounts of material that is not "true." This information, nevertheless, may be used in making an editorial judgment. It is, therefore, important to track the interactions at different points in time. Interactions are the fourth category of thoughts to be included in the coding scheme.

Other Categories

The five categories described are expected to account for most of the responses generated. However, the structuring literature suggests that these categories could not encompass the range of responses that are

quantified ideas and say 1973; Smith 1971, 1983; Guba and Benkenzie 1974; Wright 1973, 1976, 1978). Names, and other categories are included. They are curiosity thoughts, ad emotion thoughts, ad credibility thoughts, judgement thoughts, frequency thoughts, and other evaluative thoughts. Seriously thoughts and irrelevant thoughts have been included in past studies in the cognitive response tradition (Guba and Say 1973; Smith 1971, 1973; Guba and Benkenzie 1971). The ad emotion and ad credibility thoughts are derived from the work of Leta Guba 1983; Guba, Benkenzie and Smith 1983. The inclusion of the remaining two categories are described in Appendix B. It is expected that these categories provide a coding scheme that permits cognitive responses toward the brand to be partitioned into a set of subjectively evaluative and objectively evaluative categories.

Relationship to the Traditional Cognitive Response Categories

The proposed scheme has correspondence with the traditional cognitive response categories. Considering the most closely used scheme, the one introduced by Wright (1973), we find that there are five categories—counterarguments, support arguments, source derogation, and seriously thoughts (see Appendix C for Wright's 1973 coding scheme). Seriously thoughts, as defined in the proposed scheme, are consistent with Wright's definition of that category. The

contents of which Wright labeled counterarguments and support arguments have been reorganized. Elements of counterarguments are now included in one of five negatively-valenced categories: single-act interpretations, abstract interpretations, overall evaluations, inferences, and other evaluative thoughts. For instance, statements concerning an undesirable attribute of undesirable consequences of using the product would have been considered as counterarguments in Wright's scheme. In the proposed scheme, they are classified as negatively-valenced single-act interpretations and negatively-valenced abstract interpretations, respectively. Similarly, support arguments are distributed using the five positively-valenced categories of single-act interpretations, abstract interpretations, overall evaluations, inferences, and other evaluative thoughts. This leaves the category Wright labeled source derogation. The responses traditionally coded as source derogations are now coded as act assertion and act credibility thoughts.

Before leaving this chapter, however, it is important to appreciate that although there are similarities between the proposed scheme and earlier schemes, there is also an important difference: Wright's scheme, as other more recent schemes (e.g., Burke and May 1985, 1986;

Smith (1971, 1982) do so by using temporal stability as one of the dimensions along which the coding categories may be distinguished. The values presented here are only distinctions between positive and negative thoughts and between thoughts directed at the brand or the advertiser (as the Wright's assumed), but the values also attempt to discriminate between thoughts that differ with respect to temporal stability. Thus, the proposed codes are especially suited for determining what are the key predictors of retention after a delay.

Notes

1. The role of comprehension as a first step in the persuasion process has been widely debated. A number of studies have tested the causal hypothesis. Some studies have found a relationship (e.g., Eagly and Marcus 1978; Hansen and Thøgersen 1989; Johnson 1991) but others have not (Greenwald 1988; Milnes 1988; Oatthausen and Smith 1989; Edwards and Edwards 1992). Eagly (1983) argues that these studies have used measures of comprehension that are inadequate. For example, recall as a measure of comprehension confounds comprehension (assessed) before with retrieval (before the interference or delay) thereby making it unclear. Eagly (1983) manipulated comprehension and demonstrated that comprehension was a necessary antecedent of attitude formation. See also Eagly and Johnson (1984) and Eagly and Marcus (1978) for a discussion of the issues.

CHAPTER FOUR
THE ROLE OF PRIOR KNOWLEDGE

Introduction

Application of an information processing approach to the study of persistence of advertising effects at the individual level requires that we direct our attention to the processes intervening between exposure and the final outcome. Since changes in the processes could affect the end result, it is critical that we understand which variables are important and how they affect the intervening processes. In the present context, this requires that variables that affect the distribution of responses across the response categories described in Chapter Three be identified.

The literature suggests two variables that have a strong influence on the distribution of response responses. They are (a) ability to process information and (b) willingness to process information (Perry and Deshpande 1981). In the present research, the effect of prior knowledge, an operationalization of ability to process information, is investigated.

Prior Knowledge

In their researches for meaning perception, Smith and Swenson (1981) have suggested that the degree of stimulus change and the temporal persistence is determined by the extent to which the previous message is elaborated upon. In other words, they posit prior knowledge to be a key determinant of the ability of the message recipient to process the message.

The relationship between prior knowledge and information processing has been extensively documented. Research suggests that, with increased knowledge the rate of information processing is speeded up (e.g., Ellis and Swenson 1980; Posner and Segner 1978) and the effort required to re-process information is reduced (e.g., Ellis and Swenson 1980; Lerner and Hirschfeld 1979; Payne 1974; Ross and Deane 1981). The availability of processing capacity may also influence the use of analytic versus non-analytic decision strategies (e.g., Smith 1982; Ross 1982; Payne 1981).

The remainder of this chapter reviews the research on prior knowledge with particular emphasis on the literature on stretching and recovery heuristics. The influence of prior knowledge on memory and evaluation processes is documented. The research findings are organized into three sections based

on the amount of prior knowledge used. This was done because results of past research suggest to be sensitive to the operational measure of prior knowledge used.

Product Class Familiarity

It is generally acknowledged that the amount of prior knowledge consumers possess about a product category affects their information processing activities and behavior. Consumer researchers have investigated the role of prior knowledge in a variety of situations. Of particular relevance have been studies documenting the relationship between familiarity, information processing, and evaluation.

Familiarity and Memory

Wells and Shanks[] (1978) examined the impact of expertise on responses to advertising and attitude change. Prior to assigning subjects to treatment conditions (high and low knowledge), subjects filled out a questionnaire reflecting the number of earlier purchases of silver polish and their recall of brand names. Subjects with high scores on FAMIL were assigned to the high-knowledge condition; the remaining subjects were randomly assigned to the high- and low-knowledge groups. Next, subjects in the high-knowledge group read a three page write up of factual information about silver polish. This served as the knowledge manipulation.

Subjects in each knowledge condition read a print advertisement for silver jewelry and verbalized their thoughts concurrently. Measures of attitude and buying intention were also administered. The results show that QI subjects in the high knowledge condition produced more negative responses, QI the increase was due solely to increased counterarguing, and QI there were no differences in measures of attitude and buying intention across the experimental groups.

Though the primary hypothesis that expertise contributes more elaborate processing of information appeared to be confirmed, the results are ambiguous. The authors note that ten subjects in the high-knowledge group, who had prior experience with the product category, generated more negative responses than subjects with no prior product experience. Marks and Shaw (1981) report a similar finding. Several prior experiments in a measure of knowledge (e.g., Park 1978), there are three competing explanations for the nature of results. First, the laboratory manipulation of knowledge may not have generated knowledge structures (analogous to the structures that people typically have as a result of learning and product use over time). Second, Knowledge may not be a multidimensional construct; there may be different types of knowledge in terms of type

and structure, and this could lead to different reactions. Subjects with prior experience may possess a different type of knowledge acquired to those who had acquired "knowledge" in the laboratory. This will be discussed in a later section. Third, subjects who were product novices and had just learned information about the product class may have simply been representing elements of the learned material. The data do not permit the choice of one explanation over the others.

The research of Boyer (1988) is pertinent here. He presented subjects with written descriptions of diseases and assessed their cognitive responses and brand attitudes. A comparison of the responses produced by experts and novices, as assessed by a 15-item multiple choice scale measure, revealed that experts produced more cognitive responses (p<.0005).

Anderson and Ross (1981, 1984) examined the relationship between self-rated familiarity and amount of information acquired in the process of making a judgment or choosing a brand. Their results show that in situations that require subjects to take into consideration all the information, such as when making a stimulus-based judgment, experts recall more information than novices. However, when the task is a choice task, in which subjects are pressed

stringencies (Stern 1979; Leoneser and Rabinovich 1978), previous research has found, moderately familiar subjects recalled the most, and the experts recalled an intermediate amount. Johnson and Rouse (1975, 1981) argued that novices recall the least due to their inability to initially encode information. Experts recall more than moderately familiar subjects because experts are selective in what information they consider in making a choice. This selectivity at the time of encoding leads to lower than expected levels of recall. The results of Johnson and Rouse, therefore, may be interpreted as consistent with the notion that experts are better able to recall information learned earlier.

An expert's superior ability to organize and reproduce learned material is also demonstrated by Stern (1978). In that study, subjects who rated themselves as being more knowledgeable recalled significantly more of the information presented to us 7-10 days earlier than subjects who rated themselves as less knowledgeable. What is more interesting is that expert subjects produced more complex traces in the recall task, and these accounted for the differences in recall between the two groups. The work of Brail (1981) also supports this finding. These studies represent a well established result in the psychology literature (Bransford and Johnson 1972; Chiari, Glaser and Ross 1971), that is,

with increasing levels of prior knowledge people are better able to disregard and recall information.

RECALLING INFORMATION

The literature on the role of prior knowledge in retrieval judgment suggests that experts and novices use different strategies in making a judgment or choice.

Notably, the research has shown that novices rely on single heuristics and experts use more detailed strategies. For example, Park (1984) found that experts used a weighted compensatory model, and novices used an unweighted model. Sutton and Park (1988) also found that novices use simpler strategies than experts in making a judgment. Recent research by Smith (1990) also supports this. She found that novices asked for more similar alternatives compared to experts. Presumably, these heuristic alternatives would serve as a single heuristic in making a choice.

Though a considerable amount of evidence suggests that experts construct judgments from detailed information and novices use single heuristics, such as retrieval heuristics, to make a judgment, recent research by Fujita (1991) suggests that under certain circumstances, experts may use less complex and efficient strategies.

Fujita (1990) presented subjects with descriptions of two cases. One was a 1984 ELI case. The other was 192

events. The descriptions were either appropriately labeled as 10m size or 110 cases or the descriptions and category labels were interchanged. According to Fujis, the data suggest that although experts presented with (incorrectly) labeled descriptions used retrieved details to make a judgment, experts presented with the correctly labeled descriptions relied on retrieved category associated evaluations in making a judgment. Thus, Fujis's study shows that when experts are able to categorize the stimulus based, they rely on retrieval of evaluations associated with the category to make a judgment. However, when early attempts at categorization fail, experts resort to evaluation strategies based on detailed information. Similar results have also been obtained in the person perception literature (e.g., Fiske 1981; Fiske and Taylor 1984).

Taken together, the research suggests that experts (i) are able to comprehend and elaborate upon presented information, and (ii) use complex decision strategies when initial attempts to use category based evaluations fail.

Measurement of Prior Knowledge

The studies reviewed in this book use variables have typically relied on a rating scale measure of prior knowledge. Swanson and Park (1980) used a five-point scale from *unfamiliar* to *very familiar* also (1980) used a

seven-point scale ranging from very low knowledge to very high knowledge. Johnson and Jones (1990, 1991) used a five-point scale for subjects to rate prior knowledge for particular products compared to the rest of the population. Both scales, however, have a problem: they measure how much people think they know as opposed to how much they really know (Clark and Lewis 1991). A good self-rating measure of knowledge should (1) be very specific to avoid self-deception of the scale, and (2) cover the entire range of possible knowledge. In consonance with these criteria, Johnson (1990) has used a knowledge-based rating scale measure (see Table 4.1) that is anchored at one end by those who know nothing about the product and have never seen or heard of it before and at the other by those who have as much knowledge as a professionally trained person in that area (e.g., an electrical engineer for TVE). Three middle levels of expertise are also similarly defined. It is proposed that a similar rating scale be used in this research.

Structure of Knowledge

The research on the effects of the amount of knowledge revealed that knowledge was a complex construct, and it was too complex to think of expertise as having mere facts stored in memory. It was believed, that there

TABLE 3-1

SAMPLE KNOWLEDGE MEASURE SCALE

Using the scale below please indicate how knowledgeable you consider yourself to be about cars. Give your response by circling any number between 0 and 10 that best reflects your knowledge level. For your convenience, specific labels have been provided for the points 0, 5, 10, 15, and 20. Please read these descriptive labels carefully and then provide your response.

0 = You have never used the product and are completely ignorant about the product.	0
	1
	2
	3
	4
5 = You have never really considered the product but have used it occasionally and know how to use it.	5
	6
	7
	8
	9
10 = You have used the product regularly, but have never considered its details thoughtfully or purchased it for yourself.	10
	11
	12
	13
	14
15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered its details.	15
	16
	17
	18
	19
20 = You know every aspect of the product and its uses as the level of an engineer or professional in the field.	20

were differences between experts and novices in the way knowledge or learned material was structured. The theoretical and empirical research in the structure of cognitive knowledge derives its impetus from the work of Smith (1974) and Hayes-Smith (1977).

Smith (1974) conceptualized knowledge of a concept as being defined along eight structural characterizations. They are dimensionality, attribute organization, attribute controlling, evaluative controlling, individualism, image comparability, effective-evaluative consistency, effective relevance, and image equivalence. These eight characterizations relate to two aspects of cognitive differentiation, or the extent to which objects are distinguishable, and integration, or the extent to which objects are related. Taking a multi-trait, multi-method approach (Haughey and Fiske 1981), Smith (1974) showed that increased expertise leads to increased dimensionality (i.e., an increase in the number of attributes used to comprehend a domain) and organization (i.e., the number of distinguishable levels along each attribute). The results were replicated across four cognitive domains.

Taking a different perspective, Hayes-Smith (1977) has theorized about the evolution of cognitive structures and processes. For theory, an extension of Smith's (1974)

well-known theory, posits that knowledge development begins with the learning and strengthening of isolated elementary representations, called "fragments." Isolated representations are subsequently linked by associations that are attributed to knowledge-structure progression. A configuration of associated concepts may be strengthened to the point of activation, such that they are activated in an all-or-none fashion. Lower order representations are assumed to be organized and utilized as higher order representations. Further, if needed, the activated representation can be decomposed into its constituents, and the coexistence of a unified representation and its associated constituents can occur. Finally, the particular representations depend on how memory is used; if task situations require activation of a unified representation only, then the elemental constituents need not be stored separately. Alternatively, if at times the unified representation needs to be activated and at others the elements need to be activated, then the two types of representations are likely to coexist. In general, with increased levels of knowledge, more elemental concepts become available to memory; therefore one also has better representation. The exact manner in which knowledge is structured depends on how it is used.

The modeling in the psychological literature has formed the basis for examining the structure of consumer knowledge. Kumar, Giese and Ellis (1981) present one of the earliest attempts at extending the psychological research to the marketing domain. They define the structure of knowledge along three dimensions: dimensionality, articulation, and abstraction. The two former characteristics are adopted from the work of Burt (1974). The latter characteristic is based on the work of Superbach (1977) and also the studies of hierarchical groupings, Collins and Collins (1971), and codification, Simon (1973). Kumar, Giese and Ellis (1981) examined the structure of consumer knowledge using two experiments. First dimension and the representy grid (Burt 1974). The measures of cognitive structure were correlated with a 25-item matrix and containing a variety of factual questions about nutrition. Though all three dimensions had a positive correlation with this measure of knowledge, the correlations were small and not significantly different from zero.

Despite these low correlations, Burt and Giese (1981) report a study that examined the difference in the articulation and dimensionality of knowledge structures between experts and novices and the impact on cognitive responses to a sales presentation. Their results failed

to find differences in the distributions and hierarchicality of knowledge structures between experts and novices. However, they did find that experts produced fewer cognitive responses or activities in the advice presentation flow services. The difference was attributed for by greater counterarguing by the novices.

Finally, Gossner (1980) examined the relationship between familiarity and the structure of consumer knowledge using the repertory grid approach. This study has failed to find the hypothesized relationship between sophistication of knowledge structure and familiarity.

Thus, the three studies that have attempted to measure the structure of consumer knowledge have not been able to find any reliable relationships between amount of prior knowledge and structure of knowledge. These findings are rather surprising in view of the results obtained in the psychological literature (see also and Hutchinson, 1988 for a detailed review). Perhaps, the results may be accounted for by the conceptual approaches used. Alternatively, the problem may be one of range. That is, the difference in the amount of knowledge between experts and novices may be relatively small in the marketing studies set. Therefore, differences in structure may be hard to detect. Finally, it is possible that the difference may be accounted for by the

any brand-attributable information is typically processed. Unlike many other domains, brand-attributable information is processed in an evaluative mode. This may lead to the spontaneous production of evaluations which serve to organize the information (cf. Libermanstein and Frell 1985). Thus, it may be that there are no differences in the structure of consumer knowledge as a function of amount of knowledge, at least along the dimensions investigated.

Whatever the reason, the research is interesting and consumer behavior fails to replicate the psychological findings which show that knowledge begins with the acquisition of concepts at the basic level (Libe and Libermanstein 1985; Libe 1977), and extends upward with the acquisition of details and formation of lower level categories on the one hand and, on the other, acquisition of abstract concepts and the formation of higher level categories. Thus, structural differences in knowledge do not seem useful as predictors of consumer decision making.

Types of Knowledge

A third stream of research has examined the role of different types of knowledge in consumer information processing and decision making. A word of clarification about what is meant by "types of knowledge" is in order. Consider two consumers who respond identically to a

Similarly, while measures of knowledge about cars that we have used a car for five years and know a great deal about the inner workings of a car but is unfamiliar about prices, models, features, etc., of the latest product within business with us purchased a car recently. We consider the second consumer who may have purchased their first car a week ago. This consumer has just acquired a lot of information available in the market and is familiar with prices, models, features, etc., of the current product category but does not know much about the technical aspects of cars. Thus two consumers may both possess equal amounts of knowledge about cars but about different aspects. This difference is a difference in the type of knowledge that consumers possess.

Differences in the type of knowledge possessed by consumers may have a significant impact on their thought processes and behavior. For example, a person who understands technical details may be able to comprehend the detailed specifications often included in promotional literature or technically oriented products and, therefore, use the information in his/her decision making. In Rabinowitz and Jais (1980) report, consumers' responses to complex sales equipment, advertised with a range of technically worded copy, are affected by both

education level and experience with complex medical equipment.

The distinction between types of knowledge has recently been recognized by consumer behavior researchers Baschke (1982), Erwin (1982, 1983), Erwin and Mitchell (1983), Erwin, Mitchell and Baschke (1984, 1985) and Erwin (1985) between and Erwin (1985), Engel and Engle (1981). A number of scholars have distinguished between two types of consumer-experiential versus conceptual. The former refers to direct product experience, and the latter refers to knowledge acquired through learning from other information sources such as advertising (Erwin (1985), Erwin and Baschke (1984).

Baschke (1982) has suggested that the processing and effectiveness of marketing communication is contingent on the type of knowledge the consumer possesses. If a consumer has experiential knowledge, then s/he can readily comprehend and evaluate experiential information. Also, this information will enable the consumer to tap into other experiential knowledge easily. The mere coding of external information on existing knowledge structures, Baschke argues, will lead to greater information coding. Also, the activated knowledge structures referred to the stimuli can

guide evaluation by transfer of the evaluative criterion should be easy in the advertised brand.

The distinction between experiential and conceptual knowledge, however, is not directly related to how often the meaning of behavioral characterizations becomes clear with product usage, and the distinction between experiential and conceptual knowledge breaks down. Essentially, this distinction compares content of knowledge with the method of acquisition.

Trankle and Mitchell (1980) have suggested a different and more elaborate typology of the types of knowledge that consumers may possess. The distinctions in their typology are descriptive of the content. The typology provides for five types of consumer knowledge. They are (a) terminology, (b) specific facts, (c) causal relationships, (d) evaluative criteria, and (e) procedural information.

Terminology refers to knowledge of terms used within a particular domain. For example this might include the knowledge of the meaning of flavor branding, and for some things could include the meaning of statements that suggest. Specific facts are knowledge about objects in the domain. Examples are, "The IBM PC has a 386 chip," and "Toyota Corolla gets 35 miles per gallon," in the personal computer and automobile domains, respectively.

causal relationships are knowledge about how product attributes affect performance within a product domain. For example, knowing that boxer rivetless pants is more comfortable, or a four-cylinder engine leads to high gas mileage are good examples from the abstract and objective domains, respectively. Examples for evaluation are the systems of knowledge that are used for making an evaluation. An example is a car-buyer rejects a person who decides to buy a car priced at less than \$5,000, i.e., her car priced less is unacceptable.

The final category, procedural knowledge, refers to knowledge about how to use or what to do with objects within a domain. For instance, knowledge that a stereo amplifier must be set at the lowest volume setting prior to turning on the power or that the level of engine oil and water in a car should be checked every week are examples of procedural knowledge.

The cognitive aspects of each type of knowledge can have an impact on consumer behavior. For instance, the knowledge of causal relationships may lead to reduced comprehension of product benefits based on attribute information. This requires advertisers to explicitly state the benefits rather than attribute information in advertisements directed at this segment. Again, the

procedural knowledge may not affect comprehension of product information, but may lead to problems in the usage situation -- a potential source of consumer dissatisfaction.

Recently, Brucks (1984) has expanded and modified her typology of knowledge to include eight categories: learning, product identification, general attribute evaluation, specific attribute evaluation, general product usage, personal product usage, brand facts, and purchasing and decision making procedures. However, it remains to be seen if these different types of knowledge affect consumer behavior in different ways.

Though the impact of the different types of knowledge, specified in the new diathesis typology proposed by Brucks and her colleagues, on consumer behavior, have not been tested, Brucks, Churchill, and Hurler (1984) have made a beginning by examining the effects of two types of knowledge about nutrition on the processing of food advertisements. They assessed the subjects' ability to use the information in sources of knowledge of learning, and general nutrition knowledge. The impact of each on information processing was assessed. Results show that an increase in either type of knowledge led to more nutrition related cognitions. The two types of knowledge, however, had different effects on the type of

responses produced. The RIA knowledge associated with the proposition of abstract negative responses (cf. contextualized generalization) is related to the advertisements, and general nutrition knowledge was related to the proposition of specific statements produced. Thus, when people are able to deal with specific information, as is the case for those high in general nutrition knowledge, specific information is stored and may be used in making a decision.

Brooks (1995) examined the justification of self-rated knowledge and objective knowledge about eating behaviors in women. Information search in a simulated shopping task setting. She found that there were some differences in the relationship between knowledge and information search as measured by subjective self-rating measures and objective measures of knowledge that included measures of terminology, facts, evaluative criteria, and usage situations. The primary differences in the relationships between the two types of knowledge and the dependent measures were as follows: measures of objective knowledge were related to the number of attributes examined but subjective knowledge was only the measures of subjective knowledge were negatively associated with seeking better evaluations but objective knowledge was not. Brooks explained these differences by arguing that self-rating measures not only tapped the

consumers' knowledge but also their confidence in their knowledge. Objective knowledge, however, is a pure measure of what the consumer has in memory. Thus, self-rated experts are more confident and, therefore, tend not to seek others' opinions. Those high in objective knowledge are capable of dealing with more information and, therefore, search for more information when the decision task is complex. Though research still must differentiate between the effects of subjective and objective knowledge, we are unable to measure the marginal effects of the different types of objective knowledge because they were highly inter-correlated.

Taken together, the studies suggest that different types of knowledge may affect consumer behavior in different ways. However, the different types of knowledge are inter-correlated. Consumers are unlikely to learn about one type independent of the other types in the process of knowledge acquisition in the consumer environment. Thus, an analysis of the marginal effects of the different types of knowledge would be possible only through independent acquisition of each type of knowledge in the laboratory. However, even when knowledge is acquired, it would not be realistic to isolate measures of both

subjective and objective knowledge, as the two measures may be related to the dependent measure in different ways.

Summary and Concluding Comments

In summary, the literature suggests that knowledge facilitates information processing. People are able to comprehend and recall more information, as well as use more complex heuristics to form judgments. However, the ability to use more complex heuristics does not mean that experts always use detailed information and complex heuristics in making *civilizational* judgments. When simple approaches such as the use of category based evaluations present themselves, experts do resort to such simple strategies in making *civilizational* judgments.

Though the psychological research suggests that experts possess good abstract concepts, research in the field has not detected such differences in the case of consumer knowledge. Finally, abstractions are generated automatically when processing knowledge-rich information, due to the systematic processing set in force when such information is systematically processed. Alternatively, abstractions can be readily generated after the acquisition of a very rudimentary level of knowledge about a domain, and the range of abstract problems studied up here have used that all respondents possessed at least a rudimentary level of knowledge.

In the proposed study, both self-rated familiarity and objective knowledge are measured. There are two points that need to be addressed. First, in this study knowledge is assessed rather than manipulated. This was true for three reasons:

1. Consumer knowledge is acquired from various sources and from product use over time. It is unlikely that a laboratory manipulation could create knowledge structures comparable with structures consumers typically possess.

2. Consumer knowledge is of various types. Though some researchers have begun to think of the development of a taxonomy, the research is still at a very early stage. Until a comprehensive taxonomy of the types of knowledge is developed, it would be difficult to design a meaningful manipulation of prior knowledge.

3. The only study that attempted to manipulate prior knowledge (Ottman and Hirschall 1981) found that subjects who performed well on the knowledge measure, responded differently from subjects who performed poorly on these measures but were in the high-knowledge (subjective) condition. These results support the contention that laboratory manipulations, at least given our rudimentary understanding of

manager knowledge, are unlikely to provide knowledge structures that are isomorphic with the structure of experts. STAFFOR concerns have been raised by Swick (1981) and Sujan (1981).

Second, the literature review shows that (i) a comprehensive account of differences in the effect of experienced familiarity on manager information processing exists, (ii) the preliminary research on the effects of subjective and objective knowledge suggests that they may affect manager information processing and decision making in different ways, and (iii) structural differences in manager knowledge between experts and novices are difficult to detect at the non-strategic level. Thus, the differences are not useful in differentiating between the information processing and decision making strategies adopted by experts and novices. Therefore, this research only examines the effects of experienced familiarity and objective knowledge on the persuasion process.

The objective knowledge attributes are guided by the typology of Swick and Mitchell (1970). Three of the five categories from their typology are measured. They are terminology, causal relationships, and specific facts.

Terminology attributes are not measured because this category is different from the other categories in that it is

(discrepancies to the individual). Functional knowledge is excluded because it pertains to product use, and is not expected to affect the perceptions of interest in the present research.

The hypotheses about the effects of knowledge on the persuasion process, presented in Chapter Five, are with respect to the familiarity measure. This is because only in this area has there been sufficient research to warrant the testing of specific hypotheses. As mentioned earlier, consumer researchers have only recently become interested in the different types of consumer knowledge. This research seeks to contribute to this small but growing body of research by exploring the relationships between objective knowledge and advertising effects. In addition, by looking at both the effects of self-rated familiarity and objective knowledge, this research seeks to provide insights into the different ways in which they affect the persuasion process.

CHAPTER FIVE EXPERIMENT HYPOTHESES

Introduction

In the preceding chapters, the conceptual underpinnings of the proposed research were discussed. It was argued that broad attitudes of one kind or kind is a function of the relevant cognitive equilibria in memory at that time. In Chapter Three, a set of categories of cognitions were described that partitioned responses to advertisements into groups that are differentially sensitive to delay and are important as predictors of broad attitudes. In Chapter Four, the impact of prior knowledge on the distribution of cognitive responses across the various categories and their role in individual judgment were discussed.

In this chapter, a series of hypotheses is presented based on the earlier discussion. The hypotheses pertain to the effects of three independent variables--delay, prior knowledge, and contextual information--on cognitive activity and its impact on attitudes. Hypotheses pertaining to the effects of each independent variable on cognition and the

cognition-affect relationship will be discussed separately, and the hypotheses about interaction effects will be taken up in the last section.

Early Effects

The primary goals of this research are to identify categories of cognitions that exhibit differences in decay rate and to track these categories over time. In Chapter Three, four categories of thoughts directed at the brand--role recall, single-use interpretations, characteristics, and overall evaluations--were identified, and it was argued that these categories exhibit differences in retention over time. Specifically, the evidence suggests that role recall would be most susceptible to decay (Christianson 1989, Craig, Eisenstein and Lavrakas 1989, Green and McClellan 1989, Lieberman and Freil 1989, Shallice 1989, Shallice and Levy 1989). Followed by single-use interpretations (Gita and Gfir 1989, Rosenkrantz 1978a), characteristics, and overall evaluations (e.g., Bartlett 1932, DePledge 1989, Christianson 1989, Gelfand, Levine and Shaffield 1989). Hypothesis 1 states:

All brand role evaluations, character interpretations, single-use interpretations, and role recall exhibit progressively increasing rates of forgetting.

Hypothesis 1 is concerned with the forgetting of thoughts that reflect the learning and/or interpretation of

the message. In other words, there are more thoughts that are generated at the time of exposure to the ad and during later cognitive activity (e.g., at the time of attentional judgment) that accrue proportion to the attitude object that was never activated in the advertisement. These cognitions, called intrusions, are expected to increase with delay (e.g., Berkish 1958; Leving and Christensen 1972; Grosser et al. 1982; Kishor and van Gijn 1984; Lingle et al. 1979; Ryser and Grosser 1979). Hypothesis 2 states:

H2: The number of intrusions increases over time.

Hypothesis 3 suggested that, after a delay, proportionately more abstractness and overall evaluation are readily accessible in memory. The literature also suggests that the issue of a communication may be used to guide further recall (e.g., and Berkman 1978; Berkish 1958; Bagdasarian, Williams and Collins 1979; Lingle et al. 1979; Gross, Bauer and Clark 1979; Ryser 1979; Ryser, Brull and Gordon 1981). Therefore, it is expected that over time details recalled will tend to become more and more consistent with abstractness and overall evaluation (e.g., Grosser et al. 1982; Smith and Grosser 1981). Hypothesis 3 states:

H3: Over time, the evaluative implications of the message details recalled become more congruent with the evaluative implications of the abstractness and overall evaluations recalled.

A central argument in this research is is that attitudes at any point in time are a function of the thoughts available in memory at that time (Duncan and Swanson, 1974; Bush 1974; Eagleton and Swanson, 1974, 1981). Hypothesis 1 posits that over time abstractions and overall evaluations remain stable in memory. Therefore, over time, overall evaluations and abstractions are likely to play an increasingly important role as predictors of attitudes. Hypothesis 4 states:

At over time, the importance² of abstractions and overall evaluations as predictors of attitudes increases.

Practical Implications

Before hypothesizing about the effects of prior knowledge, it is important to clarify what is meant by the terms "expert" and "novice" in the context of this research. This is necessary in the level of knowledge that people possess relative with product classes. For example, for some products (e.g., novel cars) novices may possess no prior knowledge and experts may be extremely knowledgeable (Case A). For some other products (e.g., computers), novices may lack even rudimentary knowledge and experts may be extremely knowledgeable (Case B). These differences have implications for the effects that may be hypothesized. Thus for case A, novices may be expected to not just have the ability to access facts, but also to be

able to produce a variety of abstractions and interpretations. In case B, however, novices are unlikely to be able to generate abstractions.

In this research, the product ratios of case A were high. Thus, experts produce a very high level of prior knowledge and novices possess a moderate level of prior knowledge. It is important to note that the hypotheses presented with respect to the effects of prior knowledge are predicated on the specific levels of knowledge indicated above and may not be valid in other situations.

The literature suggests that knowledge is a good predictor of recall (see, e.g., 1983; Abu and Olatunbosun 1984; Ellis and Woodwell 1978; Goldstein 1983; Johnson and Rouse 1981; Rouse 1981). Thus, experts are likely to recall more of the set and produce more single-term interpretations than novices.

The number of abstractions and overall evaluations produced are not expected to be influenced by level of expertise. This is because abstractions and overall evaluations are produced automatically (see discussion in Chapter Three).

Finally, the number of inclusions is expected to vary as a function of prior knowledge. It is unclear whether inclusions will increase or decrease with knowledge. On the

was found, information may be expected to decline with increasing knowledge because experts are better able to encode the relevant information and, therefore, less likely to make a mistake. On the other hand, experts are more likely to make unexpected mistakes because they have a better understanding of the interrelationships between attributes (see also and Hashizume 1985 for a detailed discussion). Thus, Appendix 3 states:

As the number of facts recalled and the number of cognitive processes produced varies as a function of prior knowledge, the number of facts recalled and singularities interpretations produced increases with expertise. The number of alternatives and overall evaluations are unaffected by level of expertise. The number of judgments varies as a function of expertise.

CONCLUSIONS

In attempting to determine why some studies have succeeded and others have failed to find a judgmental relationship, it was suggested that access to detailed information about competing brands may play a significant role. When information about competing brands is readily available, the decision maker is more likely to rely on this brand when it is a problem to use the detailed information by comparing the target brand to the competing brand. However, when such information is not available, the decision maker is forced to rely more on abstract impressions and overall evaluations (e.g., Brown et al. 1981). Thus when

information about a competing brand is more available (contact condition), recall is expected to be more important and abstractions and overall evaluations less important as predictors of attitude. When such information is not present (no contact condition), recall is expected to be less important and abstractions and overall evaluations more important as predictors of attitude. Hypotheses 4 states:

Ifs When information on competing brands is available, recall is more important and abstractions and overall evaluations are less important as predictors of attitude. When information on competing brands is not available, recall is less important and abstractions and overall evaluations are more important as predictors of attitude.

Two-Way Interactions

Two, two-way interactions are predicted. One interaction is predicted between knowledge and delay, and the other between knowledge and context. Two perspectives exist on the way prior knowledge might affect the relative importance of the various cognitive antecedents of attitude. One perspective holds that anyone who studies perception is making a judgment because they find it difficult to combine detailed information to make an evaluation (Sherman and Park 1989; Bruck 1989; Park 1976). Abstractions and overall evaluations provide a simple heuristic as they are composed of more detailed information. Thus, someone may be expected to rely more on abstractions and overall evaluations as

compared to experts who are able to maintain detailed information in making a judgment.

The second perspective holds that experts are able to readily categorize objects and make judgments by retrieving the overall evaluation associated with the category (Osaka 1984; Kahn 1984). This perspective suggests that experts are more likely to rely on retrieved overall evaluations in forming a judgment than novices when the attempt to categorize is successful.

Whatever the process of making a judgment may be, the important point is that experts and novices are likely to rely on different types of memory traces in making a judgment.

The difference in the relative importance of the different categories of conditions, however, is contingent on the categories of cognition being retrieved at the time of decision making. As noted earlier, novice decision makers readily rely on objectiveness and overall evaluations parallel. Therefore, both experts and novices are forced to rely on overall evaluations and objectiveness when the situational judgment is temporally distant from the time at which an episode occurred. Thus, hypothesis 1 states:

If required to make either, experts and novices rely differentially on overall, objectiveness and overall evaluations in making an (evaluative) judgment when the judgment follows immediately after an episode. However,

after a delay both experts and novices are forced to rely more on abstractness and overall evaluations in making an evaluational judgment.

Hypothesis 3 stated that in the absence of detailed information on competing brands, recalled details would be mainly used in making evaluational judgments. In such situations, it was suggested that abstractness and overall evaluations were likely to be the key influences of evaluational judgments.

In Chapter Four and the discussion preceding hypothesis 4, it was suggested that experts and novices rely on different types of information in making a judgment. Considering these two factors together, two alternative consumer groups: 1) experts rely on recalled facts more than novices because experts use details from memory information about other brands against which the target brand may be compared, thus making information on competing brands available will not influence the relative importance of recall in making an evaluational judgment for experts because they use the recalled details as points of comparison and do not need the additional information. For novices, however, availability of information on competing brands influences the relative importance of recall in making an evaluational judgment. This is because in the absence of such information, novices are left with no yardstick against which

to compare the information about the target brand and PEST relatively less or relatively more.

Alternatively, it expects PEST mostly on correlated category-based evaluations (cf. Figure 1) because that affords a quick and easy route, than the availability of information on competing brands may constrain the relative importance of recall in categorical judgments made by experts. This is because the presence of such information will make PEST-based evaluations comparatively easier and, therefore, more likely to be used. Also, there may be a problem-framing effect (cf. Wright and Exp 1992). Under this scenario, the availability of comparative information may increase the effectiveness with which experts are able to utilize the recalled facts but, in a relative sense, the predictive power of recall remains unchanged. This is because in both instances categorical judgments are based on recalled facts. The key point is that the availability of comparative information and the level of prior knowledge together determine the type of information that will be used in making an evaluational judgment. Thus, hypothesis 2 states:

As the relative importance of recall, directness, and overall evaluations as predictors of attitude depends on the availability of information on competing brands and the expertise of the decision maker

The remaining interactions, i.e., the identity interactions between delay and content and the triple interaction among delay, content, and prior knowledge are not expected to be significant.

In conclusion, it is important to note that a number of issues related to the proper operationalization of the negative predictors of attitude and the coding of negative responses are not addressed by this research. Based on a critical review of past research, a number of qualitatively different types of negative responses are identified that are important as predictors of attitude, especially after a delay. This research compares the proposed categories with the traditional categories (i.e., CA and NI) to examine whether the proposed categories are better predictors of attitude. Also, a number of alternative operational measures have been proposed (e.g., summed evaluative implications, average evaluative implications, etc.). These alternative measures are empirically compared and the operational measure that best predicts attitude is identified. Specific applications are not presented due to the exploratory nature of these evaluations.

Notes

1. Important operationality defined as item-standardized beta weight.

CHAPTER III METHOD

Introduction

Before designing the main experiment, it was necessary to address a number of conceptual and methodological issues. In this chapter, a set of seven projects is described that address these issues. The first two studies deal with the development of the coding scheme and the ordering of the dependent measures. Project 3 deals with the choice of the product category to be used. Project 4 deals with the selection of attributes to be used in the alternative advertisements. Project 5 deals with the choice of a picture for the advertisement. The decision to have more than one ad and to include a picture is one of those stemmed from a desire to improve the generalizability of the research findings. The rationale is developed more fully in the introduction to Project 3. Project 6 deals with the development of objective knowledge measures and their validation. Project 7 deals with the identification of responses that are to be coded as abstractions.

Problems

The purpose of this project was four-fold. The first purpose was to determine whether the coding scheme, which was developed on the basis of theory and research in marketing, social psychology, and cognitive psychology, was capable of coding the range of responses generated upon exposure to an advertisement into a set of mutually exclusive and collectively exhaustive categories.

Second, it was important to check the clarity of the operational definitions of the categories. Could independent judges code the responses with a high degree of intercoder reliability? This question had to be answered prior to the application of the coding scheme.

Third, previous research using the cognitive response approach had relied almost exclusively on a single measure of thought elicitation (e.g., Wright 1973, 1974, 1975; Kahn 1981, 1983; Sawyer and Boush 1983). This has inevitably yielded very few cognitive responses (see Appendix A). It is possible that the full range of cognitive responses are not captured by this single measure. Therefore, it was decided to include a second verbalization measure to see if it tapped more of the total set of responses.

Finally, the question of the order of measurements needed to be addressed. Two situations in the experiment required different test order with orders, i.e., cognitive responses followed by attitudes or attitudes followed by cognitive responses. Thus the reverse attitudes first, argue that this avoids the possibility of the verbalization task influencing the response to the attitude measure, and those who measure cognitive responses first argue that this approach reduces the likelihood of respondents producing responses which were not generated by the advertising but rather defined their attitude ratings. Because both approaches are open to criticism, it was decided to examine whether the order of measurement influenced subjects' responses.

stimuli

A rough black-and-white mock-up of a print advertisement for a well-known tennis player⁷ was developed. The advertisement consisted of a headline containing the product's brand name, a picture of the product, a set of descriptive features in bulleted form, and a bulleted list of specifications. This format is typical of many hi-fi advertisements.

Subjects

Twenty-one undergraduate students enrolled in the introductory marketing course at the University of Florida participated in the project. Subjects received extra course credit for participation.

Procedure

For experimental purposes, subjects were run in small groups (no greater than five). Subjects were separated by partitions so that no communication could take place between them.

To justify the presentation of the advertisement, the experimenter explained that the brand was a new product, and the manufacturer was interested in knowing how young adults perceived the product. Subjects were asked to imagine that they were interested in buying a well-known brand and that they had just seen various television advertisements for a magazine. Subjects were instructed to spend 45 seconds looking at the advertisement. After 45 seconds, the subjects were instructed to turn the advertisement face down and pick up the questionnaire on their right-hand side. Subjects then completed the questionnaire, one page at a time. At no time were they permitted to go back to a page they had already completed.

Independent and dependent variables

The only independent variable manipulated was the order of measurement. Subjects in the attitude-first condition had brand attitude rating scales on the first page. Brand attitude was measured using two five-point Likert-type scales labeled at the end-points as "strongly agree" and "strongly disagree". Purchase intention was also measured along two five-point scales. One was labeled at the end points by "very likely" and "very unlikely," and the other was labeled at the end points by "very interesting" and "very uninteresting." A problem with the interpretation of the purchase intention scale was detected during debriefing and, therefore, data from these scales were not analyzed.

The thought-manipulation measures followed the rating-scale measures. First, subjects were asked to write down all the thoughts that crossed their mind while reading the advertisement. The instructions stressed that subjects should write down any and every thought even if they thought it was irrelevant. Three minutes were given for this task. Next, research has found that time to be important. Next, subjects were asked to describe the product to a friend who was interested in purchasing a microwave oven. Again, three minutes were given to complete the task. Finally,

subjects were given three minutes to recall as much of the advertisement as they could.

After the verbalization measures were completed, subjects were asked to indicate briefly why they had rated the product the way they had. Subjects also responded to a series of questions about their prior familiarity with the product class, interest, and so on.

Subjects also responded to the cognitive response measure that gave their attitude ratings after the verbalization measures. There were no other differences between the two groups (see appendix B for the questionnaire). Each experimental session lasted approximately 30 minutes.

Data Analysis

Cognitive Responses

The data from a random subset of 50 subjects were coded by the author. The initial coding scheme contained the following categories: conclusions/interpretations, observations, inferences, recall, other evaluative thoughts, curiosity thoughts, and perceptual thoughts, or credibility thoughts, and irrelevant thoughts. Based on the data, the definitions of the nine categories listed were sharpened and two new categories were added: overall evaluations and frequency thoughts. The detailed coding scheme is presented in appendix B.

Next, responses from all the subjects (including the 10 subjects whose responses were used to develop the coding scheme) were coded, as per the definitions presented in appendix B, by two independent judges (one of whom was the author). The results show a very high degree of intercoder reliability (94-95).

High intercoder reliability is a necessary but not sufficient condition for a good coding scheme. An additional requirement is that the errors in coding are not localized around any particular pair of categories. To determine how the errors in coding were distributed, the code assigned to each statement by each of the judges was compared. The comparative data is presented in table 5.1. The numbers along the diagonal represent the number of statements for which the judges were in agreement. The off-diagonal entries show the distribution of the statements for which the codes assigned by each of the judges was not in agreement. As can be seen from table 5.1, the errors are not localized around any particular set of categories.

Finally, a check was made to see if the additional samples of negative responses tapped otherwise untapped negativity. The data showed that the second sample did produce additional items (in all average approximately four were negative per subject were produced).

TABLE 4.1

DISTRIBUTION OF CODES ASSIGNED TO EACH RESPONSE BY THE TWO JUDGES

JUDGE 1	RECALL	RECALL- ONE	RECALL- TWO	OVERALL	DATA VALUE	OTHER PROM.	CR.	AD.
JUDGE 2								
RECALL	20							
RECALL- ONE		24						
RECALL- TWO		1	20		1			
OVERALL		1	1	4				
DATA- VALUE					12			
OTHER		1	1	2		11		1
PROM.						1		
CR.							10	
AD.							1	18

PROM. = Frequency Strengths.

CR. = CREDIBILITY Strengths.

AD. = Sum of all association and all credibility Strengths.

Order Effects

The data were analyzed for order effects. Thirteen *ANOVAs* were performed. The results showed that the order of responding had no effect on activation, the total number of cognitive responses, or any of the eleven types of thoughts even when a liberal alpha level of .10 was used (see Table 1.2 for summary results). Though the data did not reveal any order effects, it is important to note that the power of the analyses reported was low and, therefore, the possibility of order effects cannot be ruled out.

Experiment 2

Given the complete specification of the coding scheme and based on a review of the data from protocol 1, it was deemed necessary to conduct a replication using an independent data set. The second protocol was similar to the first with a few exceptions. To increase the sensitivity of the attitude and purchase intention scales,² seven-point rather than three-point scales were used. Also, the protocol included a delayed assessment condition to check whether (a) the coding scheme was capable of coding responses that were produced after a delay, and (b) there were order effects in the delayed condition.

TABLE 6.3
ANALYSIS OF CARRY EFFECTS:
SUMMARY OF RESULTS FOR PERIOD 1¹

DEPENDENT VARIABLE	MEAN DIFFERENCE BETWEEN CARRIES	F	PROB.
Billions rating	0.18	< 1	0.97
CSP 1 ²	0.44	< 1	0.48
CSP 2 ²	0.50	8	1.00
Overall	0.38	< 1	0.79

1. The more important results are summarized here. The patterns of results for the remaining analyses, not reported here, are consistent with these results. All $p > 0.05$.

2. The items CSP 1 & 2 refer to the direct and indirect cognitive response measures.

Subjects

Fourteen undergraduate students enrolled in the introductory marketing course at the University of Florida participated in the project. Subjects were awarded extra course credit for participation.

Stimuli

The same stimuli as that used in project 1 was used.

Questioning Instrument

The questionnaire was identical in content to that administered in project 1. The only difference was the use of seven-point instead of five-point attitudes and purchase intention scales and some minor changes in the wording of the questionnaire².

Procedure

Subjects were run in small groups (maximum four per group). They were separated by partitions to prevent communication between the subjects during the experiment.

The first session was identical to project 1. At the end of the first session, subjects were requested by the experimenter to come for another short (20 minute) experiment a week later. The subjects complied with this request and filled out a sign-up sheet with experimental times. They were then dismissed.

When the subjects arrived for the second session, they were reminded of the experiment in which they had participated the previous week and given a minute to collect their thoughts about the events of the earlier session. Subjects were then instructed to think back about the ad they had seen and fill out the questionnaire in front of them. The questionnaire was identical to that administered in the first session except for the omission of the familiarity measure.

Half of the subjects who had received the attitude source first in the earlier session, responded in negative response measure first and the other half again responded in attitude measure first, followed by negative response measure. Those subjects who had responded in negative response measure first in the earlier session were similarly split into two groups and were required to respond in the questionnaire in the same or different order.

Of the fourteen subjects who participated in the first session, thirteen arrived for the second session. The data for the subject who failed to show up for both sessions was dropped prior to analysis. Thus, there were four subjects in six of the order conditions and three in each of the three remaining conditions.

Data Analysis and Results

The cognitive response data were coded by the independent judges. The interrater reliability was 88%. An analysis of the distribution of these responses over which the two judges were not in agreement showed that the disagreements were not focused about any specific set of categories (see Table 4.1).

Analyses of variance were conducted separately for the data from the first and second sessions. The analysis, with order as the independent variable, revealed no significant differences (all $p < .05$) for the attitude and cognitive response measures (see Table 4.4 and 4.5 for a summary of the results). One note, it has to be pointed out that the power of the order effects analysis was low because of small cell sizes and, therefore, strong conclusions about the lack of order effects are not possible.

General Conclusions

The results of the two sessions suggest that (a) the coding scheme is reliable and (b) the order of experimental items did not bias subjects' responses, at least under the experimental situation utilized in these studies.

Footnote 1

Order of product category was defined by two criteria. First, members of the subject population had to buy along

100

DISTRIBUTION OF CASES NOTIFIED IN EACH DEPARTMENT BY TYPE
 TWO WEEKS, PERCENT

[illegible]

Year	Population	Population
1990	1,000,000	1,000,000
2000	1,200,000	1,200,000
2010	1,400,000	1,400,000
2020	1,600,000	1,600,000
2030	1,800,000	1,800,000
2040	2,000,000	2,000,000
2050	2,200,000	2,200,000
2060	2,400,000	2,400,000
2070	2,600,000	2,600,000
2080	2,800,000	2,800,000
2090	3,000,000	3,000,000
2100	3,200,000	3,200,000

Year	Number of cases	Number of deaths
1990	100	10
1991	120	12
1992	150	15
1993	180	18
1994	200	20
1995	220	22
1996	250	25
1997	280	28
1998	300	30
1999	320	32
2000	350	35
2001	380	38
2002	400	40
2003	420	42
2004	450	45
2005	480	48
2006	500	50
2007	520	52
2008	550	55
2009	580	58
2010	600	60
2011	620	62
2012	650	65
2013	680	68
2014	700	70
2015	720	72
2016	750	75
2017	780	78
2018	800	80
2019	820	82
2020	850	85

MS - 200 of 20 (2000) and 200 of 20 (2000) - 200 of 20 (2000)

TABLE A.2

ANALYSIS BY ORDER EFFECTS:
FORWARD RESULTS FOR PHASE 2

NO DELAY CONDITION

MEASUREMENT VARIABLE	MEAN DIFFERENCE BETWEEN ORDERS	T	POWER
ADDITION: BWTAG	0.75	2.3	0.75
ORD 1	0.55	< 1	0.50
ORD 2	0.25	1.0	0.21
Summed	0.75	< 1	0.61

TABLE 4.2
ANALYSIS OF ORDER EFFECTS:
POSTTEST RESULTS FOR FACTOR 2

DELAY CONDITION ¹		
DEPENDENT VARIABLE	F	Post-
Islands Rating	< 1	0.39
CAF 1	< 1	0.34
CAF 2	< 1	0.41
Score2	5.92	0.88

1. Main differences are not reported because there were first-order conditions instead of two in the delay condition.

the Familiarity Measure. Second, the product class had to be one in which consumers had a number of alternatives to make a choice and the product advertisements contain a fair amount of information.

An initial set of eight product categories was identified on the basis of judgment and by consulting sources such as Business Consumer Buying Guide, and personal discussions with colleagues and friends. To make the final choice, a group of 40 undergraduate students were asked to rate each of the product categories along a nine-point familiarity scale and, also, to list those alternatives they would consider in making a purchase from that category. The resulting instrument is presented in Appendix B.

Data Analysis

The data were analyzed to see how many students had taken each interval on the rating scale. The analysis revealed that responses for cars, well-known stores, TV's, and health clubs were most evenly distributed across the seven intervals with at least one response in seven of the nine rating intervals.

Next, the mean number of alternatives considered when making a purchase from each category was computed. The analysis showed that on an average subjects considered seven alternatives when purchasing a car. This was the highest

number of distributions considered for any of the eight integrations. The sixth highest was 1/6 for H10. The number for all eight integrations is presented in Table 1/4.

Based on these results, the product category of men's shirts shows the most significant sales growth.

1000

To avoid floor effects, it was necessary to make the questionnaire informative and useful. To do this, the effort had to include information that were considered to be important by all respondents, irrespective of expertise. Thus, the objective of part 1 was to identify variables that were considered as important by experts and novices.

Keywords: child sexual abuse; disclosure; self-blame

Based on the attributions listed in project 3, attributions were re-descriptors to polar research (e.g., 10% and 50% fully endorse 100% followed 100% and attributions mentioned in magazine articles and news reports (e.g., Chicago Tribune)' attributions, a list of 94 new attributions was derived.

[illegible]

The questionnaire consisted of ten questions. The first question was a 5-point rating scale measure of prior knowledge. The scale was adapted from the work of Johnson

TABLE 4.4

DISTRIBUTION OF RESPONSES ACROSS THE FAVORABILITY RATING
SCALE AND THE RISK RANKS OF ATTACHED DECISIONS

PROJECT CATEGORY	RISK # OF RTH.	RISK FUP.	SCALE POINTS											
			1	2	3	4	5	6	7	8	9	10	11	12
C&E	7.8	8.9	1	0	0	2	4	3	6	2	4			
EE	4.8	3.6	2	3	6	4	5	1	0	0	0			
WCH	3.4	4.9	0	3	8	1	6	4	4	1	0			
C&E, TEC.	4.7	6.7	0	0	1	1	3	3	3	0	1			
W&C&E&E&C	4.8	3.9	0	1	2	2	3	1	2	4	3			
EE, C&E&E	3.7	3.4	0	0	0	0	3	1	0	2	1			
W&E&E&E&C	5.8	5.2	0	1	0	4	8	1	3	3	4			

(1970). The scale provides an objective measure of knowledge. To minimize differences due to scale variability, due to differences in scale interdependencies across subjects, the scale was labeled at bipolar intervals with precise descriptors. The second question asked the subjects for their subjective ranking of the importance of each of the attributes listed. For the importance rating, a 5-point rating scale measure was used. An example of the instrument is presented in Appendix F.

Subjects

Undergraduate students enrolled in the introductory course of marketing at the University of Florida participated in the project. Subjects received extra course credit for participation.

Procedure

Subjects were run in two groups (one group of 78 and the other of 65). Subjects were given the two-page questionnaire and asked to read the instructions on the first page and respond to the questions on the first page only. After 10 min subjects had answered the first question, they were informed that the experimenter was interested in determining which attributes were considered important in influencing the purchase of a car so that an effective advertising campaign for a new car could be developed. Subjects were told to

compare each attribute and rate it as the Topical attribute described. Each session lasted approximately 20 minutes.

Results

The data were analyzed to see whether respondents were in agreement about the importance of the different attributes. An analysis of inter-judge reliability was performed (see River 1971). The results showed a high degree of reliability ($r_{12} = .881$).

Next, the mean rating for each attribute was computed and those attributes rated in the top 20 percentile were identified. The list of these attributes and their mean importance ratings are presented in table 4.5. The smallest mean rating for the 11 (superbath) attribute is 4.5. The corresponding mean for the 11 (non superbath) attribute is 4.8. The advertising copy was developed using most of the important attributes. A few additional attributes were included on the basis of judgment to provide a complete and realistic description of the car.

Section 3

The present research sought to examine the differential types of responses produced upon exposure to an advertisement, and how they related over time. Thus on the one hand, there was a desire to use stimuli that would provide the clearest assessment of the many pillars of the

TABLE A.7

KIAA ATTITUDE IMPORTANCE RATINGS

TOP KIAA PRIORITY	
ATTRIBUTE	RATING
PRICE	8.2
STEREO	7.8
AGE CORRECTION	7.4
NEW RELEASE	7.4
MANIPULABILITY	7.3
DISKCASE DEPT.	7.3
MIN ROOM	7.3
SCALE VALUE	7.3
QUALITY	7.3
POWER	6.8
3 SPEEDS	6.8
(Grand Mean)	<u>7.2</u>

various types of sensory traces. In the other hand, in the case of generalization in the advertising context, it was important to use stimuli that resembled real advertisements as closely as possible. In the case to achieve both objectives, it was decided to use two stimulus advertisements. One contained only verbal information and, therefore, provided an unobstructed test of the experimental hypothesis. The other contained both verbal and visual material and resembled a typical advertisement.

It was decided to use an ad containing a picture such that a picture had to be chosen for use in the ad. The purpose of this project was to choose such a picture. Two criteria were used to choose the picture. First, the picture had to be appealing. Second, the picture had to evoke a positive reaction.

Stimuli

The two pictures were identified by scanning through magazines etc. Since men are very distinctive, the pictures were taken from European magazines such as Playboy, Le Figaro, and Esquire. All the cars shown were European cars that are not available in the US.

Color slides of the pictures were produced taking care to eliminate all copy and brand names.

Procedure

Subjects were shown each slide and asked to rate each slide on a familiarity scale and also on an effort scale. In addition, subjects were required to indicate their perception of the type of car (big, compact, luxury, etc.). Each subject rated all ten slides. An example of the measuring instrument is presented in Appendix C.

Results

The mean rating on each of the scales was computed for each car. The car with the lowest familiarity rating was chosen. This car was also reasonably well liked and, therefore, chosen for use in the advertisement.

Appendix A

The purpose of this project was to validate the measures of knowledge through a test of convergent and discriminant validity. To determine the convergent and discriminant validity of a set of measures it is necessary to measure multiple traits using multiple measures. Three types of measures were developed and used to measure knowledge of three product categories which served as levels in this instance. The three product categories were cars, PCs, and VCRs.

Knowledge Measures

For each product category, three sets of measures were administered. The first measure was a 5i-point rating scale measure of prior knowledge (see description in protocol 5). The second measure consisted of three questions about ownership and purchase. The third measure consisted of a set of multiple choice questions about the product category.

The multiple choice questions provided an objective measure of knowledge and were developed in two stages. First, it was necessary to find the type of information that consumers are likely to possess. This was done by consulting the type of information presented in Consumer Reports and Consumer's Research, reports in magazines such as Popular Science, Time, News, Major News, and Life, and articles in magazines such as Young and Parents that give tips on how to buy the product. Second, a set of questions were developed based on the type of information presented in these articles. A set of 50 questions were created for each product category on the basis of judgement. The questions tapped three knowledge areas: terminology, facts, and causal relationships. A sample of the measures is presented in Appendix 6.

Procedure

All subjects responded to the knowledge questions from all three product categories. The order in which the product categories appeared in the questionnaire was counterbalanced across subjects. Subjects were run in groups and each session lasted approximately 30 minutes.

Data Analysis

The SPSS/PC¹ multilevelled correlation matrix was computed. The correlation matrix is presented in table 4.1.

Results

The correlation matrix was interpreted as per the guidelines suggested by Campbell and Fiske (1959), Nunnally and Nunnally with four criteria for evaluating the convergent and discriminant validity of a measuring instrument. The first criterion is that the elements of the validity diagonal should be large and statistically significant. This is a requirement of convergent validity. The second criterion requires that the value of each correlation in the validity diagonal should be higher than the other correlations lying on the same row or column in the multilevelled correlation matrix. That is, the validity value for a variable should be higher than the correlations obtained between that variable and any other variable having another trait not shared in common. The third criterion requires that each

correlation in the validity diagonal should be larger than the corresponding elements in the heterosocial-matched diagonals. That is, a variable should correlate higher with an informant effort to measure the same trait than with measures designed to get at different traits which happened to employ the same method. The fourth criterion is that the cross product of trait heterosociality be about 1/3 of the heterosocial frequency of both the unmatched and heterosocial blocks.

An examination of the correlation matrix set out in Table 4.8 reveals that all four criteria required of a valid consensus instrument are met by the matrix. Therefore, that matrix may be used for assessing personal knowledge without further modification.

Experiment 2⁴

Experiment 2 was designed to identify those responses which were to be noted as contradictions.

Materials

The stimulus to be used to describe the abstracted set were typed onto white cards of size 3 1/2 x 5 in. Six sets of cards were prepared.

Subjects

Fifteen undergraduate students participated in the post-test.

TABLE 3.2

MULTI-TRAIT MULTI-METHOD MATRIX OF CORRELATIONS
FOR KNOWLEDGE RESEARCH

		FAMILIARITY			INTEREST			KNOWLEDGE		
		FCR	FC	GAR	FCR	FC	GAR	FCR	FC	GAR
1	FCR	1.00								
2		$p<.001$								
3	FC	0.17	1.00							
4		$p<.05$	$p<.001$							
5	GAR	0.39	0.35	1.00						
6		$p<.001$	$p<.05$	$p<.001$						
7	FCR	0.39	-0.09	0.13	1.00					
8		$p<.001$	$p<.05$	$p<.05$	$p<.001$					
9	FC	0.16	0.05	-0.19	0.17	1.00				
10		$p<.05$	$p<.05$	$p<.05$	$p<.05$	$p<.001$				
11	GAR	0.37	0.18	0.30	0.38	0.38	1.00			
12		$p<.001$	$p<.05$	$p<.001$	$p<.001$	$p<.001$	$p<.001$			
13	FCR	0.36	0.06	0.35	0.39	0.36	0.37	1.00		
14		$p<.001$	$p<.05$	$p<.001$	$p<.001$	$p<.001$	$p<.001$	$p<.001$		
15	FC	0.30	0.51	0.32	-0.02	0.35	0.37	0.19	1.00	
16		$p<.001$	$p<.001$	$p<.001$	$p<.05$	$p<.001$	$p<.001$	$p<.05$	$p<.001$	
17	GAR	0.33	0.18	0.44	0.18	0.31	0.35	0.33	0.35	1.00
18		$p<.001$	$p<.05$	$p<.001$	$p<.05$	$p<.001$	$p<.001$	$p<.001$	$p<.001$	$p<.001$

SOURCE: BENTON, 1979.

Procedure

Subjects were run in groups of five. Upon arrival at the experimental session, subjects were asked to sort the words containing the distribution into as many piles as they desired such that each pile represented an underlying dimension. Then, they were required to label the dimensions.

Results

The category labels generated were tabulated and those labels that had been used by at least three respondents, i.e., a fifth of the respondents, were included as responses that would be classified as observations.

This procedure led to the classification of 10 observations: safe, economical, luxurious, high performance, comfortable, elegant, sporty, practical/family use, strong, quality. In addition, the observation "reliable" was included though it was mentioned by only two respondents because it was judged to be a reasonable response by the experimenter. These three are listed synonymously with them (e.g., "for an older person" was viewed as similar to the notion of "family use") and so are added as observations.

Notes

1) A well-known phrase was chosen on the basis of intuition. It was expected that subjects would use a number of observations to change a brand from this product class and, therefore, it would be meaningful to present an informative advertisement for this product class. Subjects were expected to vary widely in their familiarity with this product class.

The results of protocol 1 show that these assumptions were reasonable.

2. The purchase intention scale was not modified based on the results of protocol 1 because the data for protocol 2 were gathered before the data for protocol 1 had been fully analyzed.

3. The sorting for the spread measure of negative responses was slightly modified.

4. This protocol was conducted after all the other protocols instead of before them because it was conducted in response to a criticism that the category of observations was not defined clearly enough.

CHAPTER SEVEN MESSAGE GUIDE

SYNOPSIS

In this chapter, a research study is proposed that evaluates the hypotheses presented in Chapter Five. Three broad research questions are addressed:

1. How do individuals respond to stereotyping, and how do these responses affect attitudes over time?
2. Under what situations, if any, is receipt of message arguments a good predictor of attitudes?
3. What is the role of prior knowledge as a moderator of the persuasion process?

This chapter has three major sections. First, a detailed account of the study is presented. Second, the method of data analysis is outlined. Third, the expected results are described to show how the study allows for a test of each of the hypotheses presented in Chapter Five.

Subjects

Subjects

190 subjects recruited from undergraduate marketing classes at the University of Florida participated in the experiment. Of these, 175 subjects completed both sessions. The responses of the 15 subjects who came for the first session but not for the second were discarded. A check for differential mortality revealed that the 15 subjects were approximately equally distributed across the three delay groups. Seven subjects in the immediate condition and six in each of the two delay conditions failed to show up for the second session.

Stimuli

The quiz stimulus items were two word advertisements for a car. One advertisement consisted of a head[ing] which introduced the brand (the distinctive name given the word), followed by a picture of the car (see product 4 for a description of the shape of the picture), below which the word appeared. The word was presented in bolded form in three columns. The word described the vehicle's rating 15 attributes. Approximately half the attributes were considered as important in making a purchase decision (see description of pre-test 4 for a discussion of how the attributes were selected). This ad was deemed as

differentiated from a real advertisement by a small sample of subjects. The other advertisement was identical to the first advertisement in all respects except that there was no picture. The advertisement consisted of the headline followed directly by the copy. This advertisement did not resemble a typical print advertisement for a car.

The other objective item in this study was the description of a second car that was similar to the one described in the advertisement. This description served as the second manipulation.

Independent Variables

The three independent variables of substantive interest were time, context, and prior knowledge. Two other independent variables were stimulus repetition and assessment order.

Time and context were manipulated and prior knowledge was measured and served as a classification variable. In addition, delay was treated as both a within-subjects and a between-subjects factor. This was done by having subjects who were in the immediate assessment condition return for a second session a week later. A comparison of the time series responses of subjects in the immediate condition with the responses of those in the delay condition yielded a within-subjects analysis. Comparing the responses from the

first session of the immediate assessment group with their responses in the second session provided a within-subjects analysis.

Design. The key variable in this research was assessment delay. One third of the subjects were required to fill out the experiential questionnaire immediately after exposure to the advertisement (no delay condition). Another third returned a week later to complete the experiential assessment (delay condition). The remaining third completed the verification measures during the first session and the attitude measures during the second session (delayed attitude condition). The last group was required to use an immediate recall measure instead of delayed attitudes. It was felt that this was important because advertisements consume day-after-recall and cognitive responses and use these measures to predict later attitudes and purchase decisions.

The amount of delay was chosen on the basis of two criteria. First, the delay period had to be sufficiently long to allow for differential decay of memory traces. Second, the delay had to be short enough so that memory traces did not decay completely. A time period of one week was chosen based on past research. Cook and Cook (1978) outlined that studies that purport to investigate delay effects should interpret a delay of at least one week

Op. It, a delay period of several days has also been used by a number of past studies (e.g., Decker, Isaacs and Bartoll 1974; Deering and Christensen 1975; Lindle et al. 1975; Moore and Robinson 1983, 1984; Taylor and Christen 1978).

Design. The content assignment involved presenting one half of the subjects with information about a competing brand and the other half with no information about competing brands.

The description of the competing brand contained information on the same attributes along which information was presented in the positive advertisement. A description rather than an actual advertisement was used because it would be difficult, if not impossible, to find an advertisement for a competing entry that presented information on the same set of attributes as that used in the positive advertisement. Also, the positive advertisement may have leaked inferior in terms of execution quality in comparison to the professionally prepared and polished advertisement for the competing entry. This might have unnecessarily drawn attention away from the message content of the positive advertisement and directed it toward the ad execution related shortcomings peculiar to this experiment.

Prerequisites. Prior knowledge was measured, and served as a discriminatory variable. As noted in Chapter

First, most of the prior research has used a familiarity scale to measure knowledge. In this study, a rating scale measure of familiarity was used as the primary measure of knowledge. The measure consisted of a 25-point rating scale labeled as *Spanish idioms*. The scale was adapted from the work of Johnson (1980) and was designed to (i) reduce subjectivity in interpreting the scale, and (ii) measure the absolute level of knowledge. The scale was used in pre-study 1, and subjects in that study, when asked about the scale with which they could respond, indicated that the scale was easy to use. The scale is presented on the third page of Appendix E.

Though the familiarity scale served as the primary measure of prior knowledge, a number of other measures were also included. They were (i) correctness, (ii) time elapsed since last purchase, (iii) years of ownership, and (iv) a scale designed to serve as an objective measure of prior knowledge.

Measures of correctness and time elapsed since last purchase are common in the marketing literature; however, a measure of objective knowledge using a scale is uncommon. Only one prior study has examined the differences in the relationship between self-rated knowledge and consumer behavior and objective knowledge and consumer behavior (Dreha 1988). That study examined the differences in the

relationship between the two types of knowledge and information search. Thus, this study extends the analysis of the effects of different types of knowledge to the domain of advertising.

Discussion Implications: Two advertisements were used to summarize the two major objectives of this research. One objective of this research was to show how different types of sensory traces elicit different decay rates. If a picture is included in the stimuli, one could argue that the difference in decay rates exhibited by the different types of sensory traces is not due to the type of the sensory trace but due to the presence of the picture. For example, one could argue that an abstraction, such as "Smoky car," is more memorable not because of characteristics of abstractions per se, but because the picture of the car can be retrieved and used in forming the abstraction at the time of delayed assessment. Such an argument would be hard to refute, as a large body of literature has shown that pictures are more memorable. Even so this remains, the advertisement without any pictures seems to be the appropriate stimulus.

A second and equally important objective of this research is to relate the findings to the domain of advertising. Advertising advertisements, or for that matter advertisements in general, include pictures. If the presence

of pictures were to substantially change the findings, it would be necessary to know what these changes are. On the basis of this study, it appears that both sets should be used as stimuli. On the one hand, this would permit the evaluation of the group patterns of various memory traces without worrying about the confounding effect of pictures. On the other hand, it would permit the identification of differences, if any, that occur due to the presence of pictures. This would increase the generalizability of the findings to the advertising context.

Measurement Error. Though no order effects were obtained in procedures 1 and 2, the tests for order effects in these studies were less in power and, therefore, not could not conclusively rule out the possibility of order effects. Thus, the order in which the measures were presented (sequence of attitude first and cognition later or sequence of cognition first and attitude later) was unbalanced.

Research Variables

There were five broad classes of dependent variables: measures of cognition, attitude, believability and negative implication of the cigarette stimuli, and miscellaneous other measures. In this section, a description of the measures of cognition are presented, followed by a description of the attitude measures. Next, the measures of

validity and evaluative implication are described, and the logic behind their conclusion discussed. Finally, the miscellaneous other measures are described.

Measures of Cognition Subjects' responses to three tasks were used as measures of cognitive activity. First, subjects were given three minutes to write down all the thoughts that crossed their mind during exposure to the advertisement (the traditional measure of cognitive response). Based on pre-tests (see Chapter III) and past research (see Appendix A), a three minute time period has been found to be adequate.

Research in the cognitive response tradition has, in the past, relied solely on this single measure to monitor cognitive activity in response to ad exposure. However, it is unlikely that the magnitude and of cognitive response is assessed by this single measure. Evidence in support comes from the finding of responses reported in each of the cognitive response studies (see Appendix A) and, also, from previous 1 and 2 line Chapter III). Therefore, a second measure of cognitive activity was included. Subjects were asked to imagine that a friend had just asked them about the advertised brand, and they were to try and describe it to their friend. This measure is similar to the construct used

by Johnson and Rouse (1981) and Brucka, Kishor,] and Shulze (1984).

Third, a measure of free recall was administered. Subjects were instructed to take three minutes and write down as much of the advertisement as they could remember.

The three measures were administered consecutively, either immediately after an exposure (in the no delay condition) or a week later (in the delay condition). The decision to use a retrospective-thought-recallization procedure instead of a concurrent-thought-recallization procedure was based on a desire to equate the immediate and delay groups in terms of measurement procedure.

For half the subjects in the immediate and delay conditions, the verbalization measures were administered first followed by attitude measures. For the other half, the cognitive response and recall measures were administered after the attitude measures. Subjects in the delayed-attitude condition always received the measures of cognition first. This is because for these subjects, measures of cognition were administered during the first session and attitude measures during the second.

MEASURES OF ATTITUDE Measurement scales for brand attitude had to be carefully selected. Though a variety of rating scale measures have been used to measure brand

adjective Quasi 1980, 1981; Quasiest 1981; Quasiest and Quasi 1981; Quasi and Quasi 1981), most studies have not used multiple measures or tested for convergent and discriminant validity.

In this study multiple measures were used. The measures were adapted from the work of Hoffman, Hilson and Feshbach (1981). These researchers had assigned the convergent and discriminant validity of their measures. Activities toward the bond was measured on three different types of semantic scales. The first measure utilized a semantic differential format consisting of five seven-point evaluative bipolar scales with endpoints labeled "disagree-completely," "dislike-dislike," "dislike-dislike," "dislike-dislike," and "dislike-dislike." The second measure utilized an adjective-type affective scale (Hoffman, Hilson, Peters and Feshbach 1981) that has been refined by Hilson and Hoffman (1981). This scale consists of six items labeled "happy," "happy," "dislike," "dislike," "dislike," and "dislike." Each word had to be rated on a seven-point scale labeled "very much so" and "not at all." The third measure consisted of five adjective-type items with evaluative adjectives judged along a seven-point scale with endpoints labeled "strongly agree" and "strongly disagree."

Evaluative Evaluation, Reliability and Accuracy

Accuracy. The negative response measure and the recall measure tap an individual's reaction to the advertisement and message learning. Three additional measures are necessary before all the hypotheses can be tested. Even though most researchers will agree that the evaluative implications of negative reactions and recall vary, how they vary is their principle of effectiveness and engagement, most studies do not weight each response accordingly (either, make an overall OPA, both are true) this are rare exceptions. The third measure, therefore, measures the evaluative implication of each negative response and message recalled. The evaluative implication measure consists of a seven point-scale labeled at the endpoints as "extremely positive" and "extremely negative." This measure indicates the evaluation associated with each thought.

The second measure is a measure of believability, as noted in chapter three, one of the reasons why recall has often failed to predict attitudes is because recalling a message argument, by act of itself, does not clarify meanings. For my recall that advertisement I claimed that brand T was ingredient E, but disbelieve the claim. In such cases, recall will not predict attitudes. Therefore, a

measure of believability of result is included. The measure consists of a single seven-point belief scale that requires the respondent to indicate how likely it is that the brand does indeed possess each feature recalled.

The third measure is a measure of the importance of each thought in forming an evaluation. The measure is included because researchers have suggested that weighting each cognition by its importance in the decision process may enhance the ability to predict attitudes. The measure consists of a single 7-point rating scale labeled at the endpoints as "Extremely Important" and "Not at all Important."

These three measures were administered after all other dependent measures had been administered¹.

Filler Questions and Filler Task. A set of filler questions and a filler task were required to disguise the subjects in the delay condition that the experiment was over after the first session. This is important so subjects' responses may have been biased if they had suspected that a delayed measurement would be administered. Therefore, at the end of session 1, all subjects completed a set of filler questions and a filler task. The filler measures consisted of a set of questions ascertaining if they found the experiment interesting, whether it was too long, whether the

instructions were clear, and whether they found it easy to respond to the familiarity scale and the knowledge scale. The subjects also responded to a small battery of psychographic scales. The filler task, which was administered at the very end, required the subjects to memorize a set of new items and a set of items already. They were given 45 seconds for this task. Subjects were informed that during the second session they would be asked questions about this filler task.

Procedure

Subjects were run in groups of five. Each subject was assigned to a seat separated from other subjects by a screen. Subjects were told that the experimenter was interested in the subjects' knowledge and opinions about cars. The subjects were then asked to respond to the knowledge measure. Under the guise of a measure, subjects were shown the alternative advertisement for 45 seconds by a slide projector. Next the subjects saw the ad containing the picture the other half saw the ad without the picture and asked to indicate if they had ever seen the product or the advertisement. This was done to expose subjects to the advertisement at least twice so that the initial impact of the advertisement was minimized¹⁰. Questions pertaining to subjects' opinions about foreign and domestic cars were also included to convince subjects that the reason given earlier

was the first purpose of the experiment. At this point, subjects in the control condition were given the description of the comparative policy and instructed to read the description carefully. 90 seconds were allowed for reading the description. Past experience suggests that this should be sufficient. After the 90 seconds had expired, the descriptions were removed. Subjects in the no control condition were given ninety seconds to solve a word puzzle (Baker problem). Next, subjects (both conditions) for all subjects were told that they would again see the advertisement they had seen earlier, and that the word advertisement was for a new car about to be introduced by one of the three leading US automakers--GM, Ford, or Chrysler. No information about the purpose of the second exposure was given. The same word-up advertisement was then presented.

Subjects were again given 90 seconds to consider the advertisement. Following exposure, there is the 90 second condition who presented the dependent measures. Half the subjects received the measures of cognition first, the other half received the attitude measures first. The subjects responding to the cognitive measures first, received the three verbal cognition measures. They had three minutes to respond to each measure. Next, the attitude measures were administered. After the attitude measures had

have happened, subjects were asked to return to their verbal protocols and work with thought using the associative implication scale. Next subjects rated the recalled items using the belief scale. Finally, subjects rated each thought and item recalled using an importance scale.

The other half of the subjects received the attitude measures first. On completion of these measures, they performed the three verbalization measures. Finally, the associative implication, belief, and importance scales were administered. After the administration of the dependent measures, all subjects in the no delay group completed the filler questions and task. They were then dismissed after reminding them to return for the next session a week later.

Subjects in the delay condition responded to the filler questions and completed the filler task. They were then dismissed after reminding them to return for the next session a week later.

Subjects in the delayed attitude condition completed the three verbalization measures, the filler questions and filler task. They were then dismissed after being reminded to return for the second session a week later.

The first session lasted approximately 45 minutes for the no delay group, 35 minutes for the delay group, and 35 minutes for the delayed attitude group.

During the second session, a total of 1040 subjects in the no delay condition responded to the three measures of cognition and the attitude measures. The cognitive measures were administered first. This was followed by the attitude measures. The order of measurement was well counterbalanced because the primary purpose of the second session for the no delay subjects was to measure their memory for facts and cognitive responses.

Subjects in the delay group were administered the three measures of cognition and the attitude measures. The order of presentation was counterbalanced. Half the delay group subjects received the cognitive measures first and the other half received the attitude measures first.

Subjects in the delayed attitude group responded only to the attitude measures.

After the dependent measures had been completed, all subjects were debriefed, instructed to not discuss the experiment with anyone during the rest of the semester, and dismissed. The second session lasted approximately 30 minutes for the no delay and delay group subjects, and less than 15 minutes for subjects in the delayed attitude group. A flow chart of the experimental procedures is presented in Figure 7.1

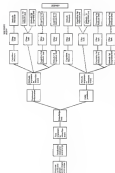


TABLE 1.1
CLASSIFICATION OF LITERATURE

The research design of the study provided both a between and a within subject analysis over delay.

Data Analysis

The data analysis involved two steps. First, the verbal protocols from the negative response measures were coded by a pair of judges in two steps. That is, the judges coded the negative responses into the 10 coding categories proposed single-see interpretations, distractions, control evaluations, intrusions, frequency statements, other evaluative thoughts, externally thoughts, creditability thoughts, of controlled thoughts, irrelevant thoughts (see Appendix 4) with, also, into the two traditional response categories counterargument and support arguments¹. There was a high degree of agreement between the codes assigned to each response by the two judges (93%). Disagreements were resolved by discussion.

For each person, five negative response codes were computed: the number of negative responses in each category (only for M1 and M2), the sum of the evaluative implications of responses in each category, the average evaluative implication of the responses in each category, the summed evaluative implications of the responses in each category weighted by experience weight, and the average evaluative

logarithm of the response in each category weighted by importance weight.

For the small dataset, seven scores were computed: number of lines recalled, summed evaluative logarithm of the lines recalled, average evaluative logarithm of the lines recalled, summed evaluative logarithm weighted by importance weight, average evaluative logarithm weighted by importance weight, summed evaluative logarithm weighted by belief strength, and average evaluative logarithm weighted by belief strength⁵.

Second, the hypotheses were tested using (a) planned contrasts, (b) correlation analysis, and (c) regression analysis. The results of this research are discussed in the next chapter.

Notes

1. Bipolar measures of evaluative logarithm and believability are used as per the recommendations of Baigun, Jagan and Jato (1998). Also, Jagan and Redfield (1998) note that bipolar scales are necessary for both belief and evaluation scales to obtain the correct values when the 1 belief and evaluation measures are multiplied. Finally, cross-product scales are used as they have been found to convey the maximum information (Anderson, 1980).

2. The decision to hold repetition constant at two exposures was based on past research. In his eye movement experiments with print advertisements, Ferguson (1981) showed that peak effectiveness was constant across 2-3 exposures. Green and Sullivan's (1981) research with COMFLEX (an Ogilvy & Mather's (1981) version of Advertising) showed that 2-3 exposures were optimal.

L. The responses were coded as support- and counterarguments as per the guidelines proposed by Petty and Cacioppo (1983). Thus, a response such as "unreliable car" was coded as an objection as per the proposed scheme and as a support argument as per the traditional scheme.

M. The rationale underlying the inclusion of recall and cognitive responses is discussed in Chapter Three. The number of responses of each type is included as this has been the operational measure that has been traditionally used.

CHAPTER EIGHT RESULTS

Introduction

In this chapter, the key results of the study described in Chapter Seven are presented.⁵ The chapter consists of five sections. The first section deals with the preliminary analysis. In the second section, tests of the hypotheses pertaining to the extent of memory recall and cognitive responses produced as a function of delay and prior knowledge are discussed. The third section deals with the selection of spontaneous judgments of recall, and cognitive responses that best predict utilization. The latter section also evaluates the hypothesis regarding the relationship between utilization and utilization. In the fourth section, the proposed role of cognitive response rehearsal is compared with counterargument and support arguments to determine which set of arguments provides stronger evidence, especially after a delay. The fifth section deals with the comparison of recall recall as a predictor of utilization.

Reliability Analysis

Reliability Results

First, a factor analysis was conducted using the 14 attitude scale items. The analysis revealed that 12 of the 14 items loaded on the first factor which explained approximately 58% of the variance. (See Table IV). None of the remaining factors explained a significant portion of the variance.

Based on the results of the factor analysis, the 12-items that loaded on the first factor were retained. Next, a reliability analysis was conducted for the 12 items retained. The analysis showed the thirteen attitude scale to be highly reliable (Cronbach alpha=.88). For all further analyses, the mean score using the 12 scale items was used as the operational measure of the independent construct.

Correlation Between Interest and Knowledge

One of the independent variables of interest in this research is prior knowledge. Because prior knowledge was measured and not manipulated, it is possible that a variable correlated with prior knowledge is responsible for the pattern of results. One variable that has been found to be correlated with knowledge is motivation (e.g., Lata, McInnis and Balch 1990). Based on the results of this experiment, consumers who are knowledgeable about cars, are likely to

TABLE 3-1

PRINCIPAL COMPONENTS OBTAINED FROM FACTOR ANALYSIS OF
ATTITUDE ITEMS

ITEM # ^a	FACTOR LOADINGS ^b		
	Factor 1	Factor 2	Factor 3
13	0.8798	"	"
5	0.7855	"	"
9	0.7921	"	-0.3681
11	0.7815	-0.3681	"
1	0.7586	"	"
2	0.7580	"	"
12	0.7136	"	"
14	0.7110	"	"
4	0.7058	"	"
15	0.6117	"	"
3	0.6058	"	"
16	0.3975	"	"
8	0.3634	-0.4104	"
6	0.3588	-0.4118	"
10	0.4229	"	0.7675
7	0.47038	0.4228	0.6781
Variances	442	109	896

^aItems with alpha weights greater than 0.5 are reported. Also, only loadings greater than 0.30 are reported.

^bItems 1 through 8 are bipolar scales labeled at the endpoints with "good-not," "pleasant-unpleasant," "likable-not likable," "interesting-uninteresting," "enjoyable-not enjoyable," and "attractive-unattractive," respectively. Items 9 through 11 were attitude-type attitude scales (about "anger," "happiness," "fear," "likability," and "pleasant") respectively. Items 12 through 16 were likability items.

have acquired this knowledge because they are interested in cars and have taken the trouble to learn about them.

In this and alternative motivational explanations of the results, measures of activation had been isolated as filler questions. Subjects responded to two 5-point rating scale measures of their activation to process the advertisement. The first question asked subjects to indicate how interesting they found the advertisement; the second question asked subjects to indicate how attentively they had followed the experimenter's instructions.

The correlations between each of these measures and measures of familiarity and objective knowledge was computed. The correlations were small and not significant ($r = .04$, $p < .05$). However, the correlation between the two measures of activation was significant ($r = .41$, $p < .05$). The results are presented in table 8.4.

The Effects of Delay and Knowledge on Recall and Cognitive Elaboration

In this section, hypotheses 1, 2, 3, and 5, that, respectively, about the effects of delay and knowledge on the amount of facts recalled and cognitive responses produced, are examined. In tables 8.5 through 8.8, the mean number of facts recalled, single- and two-response elaborations, overall evaluations, and inferences are presented as a function of delay, familiarity, and content to show the

TABLE 3.2

CORRELATIONS BETWEEN PRIOR KNOWLEDGE AND MOTIVATION

	MOTIVATION ^a	
	DETERMINATION OF EXPERIMENT	APPLICATION
PERILLACITE KNOWLEDGE	0.001 p<0.05	0.008 p<0.05
OBJECTIVE KNOWLEDGE	0.009 p<0.05	0.001 p<0.05

^aThe two measures of motivation are correlated ($r=0.78$, $p<0.001$)

TABLE 3.3

MEAN NUMBER OF FACTS RECALLED AS A FUNCTION OF
DELAY, FAMILIARITY, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FUEL	11.24	8.12	9.57	8.18
MED. FUEL	13.64	5.89	12.43	9.89
HIGH FUEL	18.28	4.57	17.29	8.97

TABLE 3.1

MEAN NUMBER OF SIMUL-COM IDENTIFICATIONS AS A FUNCTION OF
DELAY, FACILITATION, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FUEL.	1.18	1.50	2.43	2.91
MID. FUEL.	1.75	1.50	2.75	1.80
HIGH FUEL.	1.59	1.87	2.50	2.91

TABLE 2.3

MEAN NUMBER OF REVELATIONS AS A FUNCTION OF
 DELAY, FACILITATION, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FUEL.	2.55	2.75	2.71	2.87
MID- FUEL.	2.75	2.95	2.91	3.05
HIGH FUEL.	2.95	3.17	3.28	3.35

TABLE 3.1

MEAN RANKS OF VISUAL EVALUATIONS AS A FUNCTION OF
DELAY, FAMILIARITY, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FAMIL.	0.78	0.50	0.93	0.83
MID- FAMIL.	0.51	0.21	0.76	0.50
HIGH FAMIL.	1.00	0.88	0.71	0.46

TABLE 3.1

MEAN NUMBER OF INTRODUCTIONS AS A FUNCTION OF
DELAY, FACILIATION, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FACL.	0.81	1.48	0.97	1.85
MED. FACL.	0.99	1.66	0.97	1.99
HIGH FACL.	0.97	1.73	1.06	2.73

TABLE 3.1

MEAN WORDS OF COMPREHENSION AS A FUNCTION OF
DELAY, FACILITATION, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FREQ.	0.77	0.60	1.07	1.89
MED. FREQ.	2.77	2.10	2.71	5.36
HIGH FREQ.	7.67	7.01	7.83	7.40

TABLE 8.1

MEAN WORDS OF SUPPORT ADJUDGMENTS AS A FUNCTION OF
 DELAY, FACILITATION, AND CONTEXT

	NO CONTEXT		CONTEXT	
	NO DELAY	DELAY	NO DELAY	DELAY
LOW FREQ.	7.84	8.50	8.00	8.87
HIGH FREQ.	8.77	9.49	8.89	9.88
MEAN FREQ.	8.87	9.75	9.75	10.69

general patterns of data. Additional tables are used to highlight specific sets of data that are of interest when discussing particular hypotheses.

[illegible]

Hypothesis 3 states that overall, individuals, individually, single-run interpretations, and two-run interpretations progressively increasing rates of forgetting. A test of this hypothesis requires that the contents of a subject's memory at the time of ad exposure be compared with his/her memory later on in time. Such a comparison is possible using the data provided by the no-delay group, as these subjects responded to the cognitive response measures both immediately after ad exposure and, again, 8 weeks later.

The protocols of the reading subjects were examined to see how many of the facts recalled, single-word interpretations, abbreviations, and overall evaluations produced during the first session were again produced during the second session (see table 3.10). The comparison revealed that overall evaluations recalled by HJ, abbreviations by HJ, single-word interpretations by HJ, and short stimuli by JG.

A comparison of these proportions using a repeated measures analysis of variance showed that proportion to be significantly different from each other (Table 2, ANOVA).

TABLE 8.12

KITCHEN SINKS/PS COMPARISON OF THE NUMBER OF COGNITIVE RESPONSES FROM EACH TECHNIQUE

CATACOMB	APPROACHES (NUMBER OF IMMEDIATE RESPONSES)	APPROACHES (NUMBER OF DELAYED RESPONSES)	1	2	PS-2
Item 11	15.77	9.15	80	15.00	8.00
Single-use	3.00	8.00	51	8.00	8.00
Elimination	0.00	1.00	40	8.00	8.00
Overall Total	4.00	9.00	30	1.00	0.00

Follow-up analysis involving pair-wise comparisons of adjacent means revealed that Fast recall is forgotten significantly faster than single-word interpolations (F=4.18, $p<.05$), single-word interpolations were forgotten significantly faster than abbreviations (F=3.18, $p<.05$), and abbreviations and overall recitations did not differ significantly in their forgetting rates (F=1.44, $p>.05$).

Taken together, the data support hypothesis 1. That is, Fast recall is forgotten the fastest followed by single-word interpolations, abbreviations, and overall recitations, respectively.

Additional analysis on memory after sleep

To test hypothesis 2, a within subjects ANCOVAs over sleep and wakefulness because hypothesis 2 was concerned with what happens, over time, to the various types of recitations available immediately after exposure to the list. In addition, it is of interest to understand what is available in the morning and after a sleep as, in these conditions that are likely to affect later retention going (Bassuk and Bickman 1978; Bass 1981; Bjorklund and Bjorklund 1974, 1981). When data is used, four ANOVAs were conducted with sleep, familiarity, category, order, and volume as the independent variables and each of Fast recall, single-word interpolations, abbreviations, and overall recitations as the

dependent variables. The results are presented in tables 8.71 through 8.74.

The results show that both small deviations significantly ($p < 0.001$, $p < 0.01$,² $p < 0.05$) interactions between $P(\Delta)_{\text{H}}$, $p(\Delta)_{\text{H}}$, and single-run interactions and overall evaluations remain unaffected (single-run interactions $P(\Delta)_{\text{H}}$, overall evaluations $P(\Delta)_{\text{H}}$, $p(\Delta)_{\text{H}}$). The mean number of such responses as a function of delay is presented in table 8.75.

In sum, the results show that over short temporal intervals are forgotten but their interpretation is retained, especially the first.

Experiment 2

Experiment 2 tested that over long time intervals of judgments forgotten. A five-step ABBA was conducted with delay, familiarly, random, order, and stimuli as the independent variables and the number of intrusions as the dependent variable. The results are presented in table 8.76.

The analysis reveals that the number of intrusions over time double over a delay of one week (from 0.75 to 1.50; $P(\Delta)_{\text{H}}$, $p(\Delta)_{\text{H}}$). The results also show a delay \times order \times subject interaction ($P(\Delta)_{\text{H}}$, $p(\Delta)_{\text{H}}$).

Follow up analysis revealed that the delay \times order \times subject interaction was due to a small \times order interaction in the delay condition ($P(\Delta)_{\text{H}}$, $p(\Delta)_{\text{H}}$) but not in the no-

TABLE B.11

ANALYSIS OF VARIATION THROUGHOUT THE RANGE OF FACTS EXAMINED
 ANALYSIS USING ANOVA

SOURCE	DF	SUM OF SQUARES	F VALUE	PD %
Delay	1	975.773	155.887	9.97
Phase	2	15.883	2.58	9.98
Delay*Phase	2	28.976	4.57	9.99
Construct	1	1.873	0.29	9.99
Delay*Construct	1	11.293	1.77	9.97
Construct*Phase	2	15.232	2.44	9.98
Delay*Construct*Phase	2	11.876	1.88	9.98
Center	1	74.072	11.62	9.77
Delay*Center	1	91.892	14.50	9.97
Phase*Center	2	3.448	0.54	9.77
Delay*Phase*Center	2	5.891	0.91	9.97
Construct*Center	1	0.668	0.10	9.97
Delay*Construct*Center	1	1.858	0.29	9.97
Construct*Phase*Center	2	18.071	2.85	9.98
Delay*Construct*Phase*Center	2	5.778	0.89	9.99
Between II	1	8.131	0.13	9.99
Delay*Between II	1	5.131	0.79	9.99
Phase*Between II	2	19.278	3.01	9.79
Delay*Phase*Between II	2	15.244	2.40	9.99
Construct*Between II	1	15.238	2.40	9.99
Delay*Construct*Between II	1	15.238	2.37	9.77
Center*Between II	1	8.704	0.13	9.97
Delay*Center*Between II	1	2.174	0.34	9.98
Phase*Center*Between II	2	8.703	0.13	9.97
Delay*Phase*Center*Between II	2	15.877	2.49	9.77
Center*Phase*Center*Between II	2	18.877	2.91	9.99
Delay*Construct*Phase*Center*Between II	1	3.432	0.53	9.97
Error	87	563.600		
Grandtotal Total II	127	3773.540		

TABLE 12

IMPACT OF INDEPENDENT VARIABLES ON THE NUMBER OF SCHOOL-AGE
 LABORERS(1990) - MULTIPLE CORRELATION ANALYSIS

SOURCE	DF	SUM OF SQUARES	F VALUE	PROB
Between	1	1.092	8.48	0.00
Total	8	8.587		
Between*Pheat	2	7.517	1.48	0.23
Constant	1	11.888	9.45	0.00
Between*Constant	1	7.885	1.38	0.25
Constant*Pheat	2	6.408	8.17	0.04
Between*Constant*Pheat	2	9.792	8.83	0.00
Error	1	1.188	2.43	0.18
Between*Gender	1	1.048	0.88	0.36
Total*Gender	2	9.587	1.85	0.16
Between*Constant*Gender	2	8.873	0.44	0.64
Constant*Pheat*Gender	1	9.587	2.35	0.13
Between*Pheat*Gender	1	7.387	0.11	0.74
Constant*Pheat*Gender	2	9.792	8.84	0.00
Between*Constant*Pheat*Gender	2	8.873	0.11	0.91
RESIDUAL	1	0.795	2.63	0.10
Between*Pheat*RESIDUAL	1	0.888	0.33	0.56
Total*Pheat*RESIDUAL	2	11.794	1.41	0.25
Between*Pheat*RESIDUAL*RESIDUAL	2	9.388	1.88	0.16
Constant*Pheat*RESIDUAL	1	0.888	0.88	0.35
Between*Constant*Pheat*RESIDUAL	1	1.883	1.87	0.18
Constant*Pheat*RESIDUAL*RESIDUAL	2	11.794	2.38	0.18
Between*Pheat*RESIDUAL*RESIDUAL	2	9.388	0.73	0.45
Error*RESIDUAL	1	1.877	0.83	0.36
Between*Pheat*RESIDUAL*RESIDUAL*RESIDUAL	1	1.473	0.11	0.74
Total*Pheat*RESIDUAL*RESIDUAL	2	9.388	0.82	0.42
Between*Pheat*RESIDUAL*RESIDUAL*RESIDUAL*RESIDUAL	2	1.473	0.88	0.41
Constant*Pheat*RESIDUAL*RESIDUAL	1	1.877	0.88	0.40
Between*Constant*Pheat*RESIDUAL*RESIDUAL	1	1.888	1.38	0.24
Total*Pheat*RESIDUAL*RESIDUAL	2	8.183	1.83	0.16
Between*Constant*Pheat*RESIDUAL*RESIDUAL	1	0.788	0.68	0.42
Error	81	108.787		

TABLE 5.13

TABLE OF EXPERIMENT RESULTS BY THE KIND OF INSTRUCTIONAL
MATERIAL USED (FAMILIARITY)

SCORE	df	SUM OF SQUARES	F VALUE	PROB
Delay	1	26.738	5.36	0.03
Fixed	2	6.876	0.89	0.76
Delay*Fixed	2	6.799	0.78	0.68
Continuous	1	6.056	1.03	0.31
Delay*Continuous	1	1.295	0.13	0.72
Continuous*Fixed	2	11.363	1.86	0.29
Delay*Continuous*Fixed	2	6.810	0.82	0.70
Error	1	2.275	0.46	0.63
Delay*Error	1	6.066	0.79	0.37
Fixed*Error	2	4.603	0.66	0.63
Delay*Fixed*Error	2	6.114	0.69	0.50
Continuous*Error	1	1.391	0.21	0.64
Delay*Continuous*Error	1	0.602	0.14	0.71
Continuous*Fixed*Error	2	10.989	1.62	0.27
Delay*Continuous*Fixed*Error	2	3.040	0.39	0.67
Total	1	95.738	11.84	0.01
Delay*Total	1	6.735	0.82	0.37
Fixed*Total	2	37.838	3.68	0.03
Delay*Fixed*Total	2	16.168	1.77	0.18
Continuous*Total	1	6.057	0.67	0.41
Delay*Continuous*Total	1	13.552	0.87	0.35
Continuous*Fixed*Total	2	6.094	0.59	0.54
Delay*Continuous*Fixed*Total	2	6.052	0.67	0.51
Error*Total	1	3.875	0.67	0.51
Delay*Error*Total	1	3.074	0.79	0.38
Fixed*Error*Total	2	6.004	0.78	0.48
Delay*Fixed*Error*Total	1	1.813	0.36	0.55
Error	11	945.003		
Corrected Total	127	946.007		

TABLE 3.13

EFFECT OF INDEPENDENT VARIABLES ON THE MODELS OF OFFICIAL EVALUATIONS:
ANALYSIS USING PARALLELITY

MODEL	DF	SSA OF MODEL	F VALUE	PR>F
Delay	1	6.309	1.079	0.31
Power	2	1.773	0.29	0.74
Delay*Power	2	2.447	0.41	0.66
Connect	1	0.404	0.10	0.75
Delay*Connect	1	2.304	3.87	0.04
Connect*Power	2	0.554	0.09	0.93
Delay*Connect*Power	2	1.013	0.16	0.84
Order	1	0.340	0.05	0.82
Delay*Order	1	0.490	0.10	0.74
Power*Order	2	1.004	0.24	0.79
Delay*Power*Order	2	0.554	0.09	0.93
Connect*Order	1	0.404	0.07	0.81
Delay*Connect*Order	1	0.190	3.44	0.07
Connect*Power*Order	1	0.017	0.34	0.56
Delay*Power*Connect*Order	2	1.440	4.17	0.01
Model1	1	6.309	0.90	0.34
Delay*Model1	1	1.093	1.89	0.17
Power*Model1	2	0.640	0.40	0.67
Delay*Power*Model1	2	1.007	0.88	0.41
Connect*Model1	1	0.201	0.47	0.49
Delay*Connect*Model1	1	0.052	0.93	0.33
Connect*Power*Model1	2	1.070	0.44	0.63
Delay*Connect*Power*Model1	2	0.038	0.03	0.97
Order*Model1	1	0.011	0.07	0.84
Delay*Order*Model1	1	0.048	0.10	0.73
Power*Order*Model1	2	4.145	2.09	0.09
Delay*Power*Order*Model1	2	0.007	0.71	0.69
Delay*Connect*Order*Model1	1	0.070	1.14	0.29
Connect*Power*Order*Model1	2	0.051	0.03	0.87
Delay*Connect*Power*Order*Model1	1	0.070	1.14	0.29
Connect*Power*Order*Model1	2	0.004	1.04	0.31
Delay*Connect*Power*Order*Model1	1	0.005	0.01	0.91
Error	81	14.082		
Total	122	24.184		

Significant at 0.001 level. *Significant at 0.0001 level. *****Significant at 0.00001 level.

TABLE 4.15

THE MEAN RANGES OF EACH TYPE OF OPERATION AS A FUNCTION OF
DELAY: A BETWEEN GROUP ANALYSIS

	DELAY	
	NO DELAY	DELAY
RECALL	11.75	9.50
SEARCH-COM	31.50	1.50
ANALYSIS-COM	3.50	1.50
OVERALL TIME	46.75	13.50
DEVIATION	0.75	1.50

TABLE 8.14

IMPACT OF INDEPENDENT VARIABLES ON THE NUMBER OF EXTENSIONAL
ANALYSIS BEING PURSUED^a

Source	df	Sum of Squares	F Value	p-Val
Intercept	1	28,007	65.04	0.00
Phase1	2	5,039	1.15	0.30
Delay*Phase1	2	1,494	0.37	0.69
Constant	1	0.001	0.00	0.99
Delay*Constant	1	1,300	0.02	0.89
Constant*Phase1	2	1,054	0.00	0.98
Delay*Constant*Phase1	2	0.000	0.21	0.81
Order	1	0.000	0.00	0.99
Delay*Order	1	0.190	0.17	0.68
Phase1*Order	2	0.003	0.07	0.97
Delay*Phase1*Order	2	0.019	0.00	0.99
Constant*Phase1	1	0.007	1.00	0.32
Delay*Constant*Order	1	0.011	0.00	0.99
Constant*Phase1*Order	2	1.007	0.00	0.70
Delay*Constant*Phase1*Order	2	0.000	0.00	0.99
Phase1:1	1	0.010	1.07	0.31
Delay*Phase1:1	1	0.180	0.00	0.99
Phase1*Phase1:1	2	0.000	0.00	0.99
Delay*Phase1*Phase1:1	2	0.004	0.20	0.83
Constant*Phase1:1	1	0.191	1.00	0.32
Delay*Constant*Phase1:1	1	0.000	1.24	0.27
Constant*Phase1*Phase1:1	2	0.113	0.00	0.99
Delay*Constant*Phase1*Phase1:1	2	0.004	0.07	0.93
Order*Phase1:1	1	1.000	0.00	0.73
Delay*Order*Phase1:1	1	0.001	0.01	0.97
Phase1*Order*Phase1:1	2	0.001	0.70	0.67
Delay*Phase1*Order*Phase1:1	2	0.140	0.00	0.99
Constant*Order*Phase1:1	1	0.180	0.12	0.73
Delay*Constant*Order*Phase1:1	1	0.007	0.00	0.99
Constant*Phase1*Order*Phase1:1	2	0.007	0.00	0.99
Delay*Phase1*Order*Phase1:1	1	0.190	1.10	0.30
Error	40	121,207		
Corrected Total	107	213,267		

^aPhase1 = 1 = Phase 1, 2 = Phase 2

delay conditions (waitH, waitN). In comparison of the scores recorded on comparable picture (Table 8 VII). When the measures of vigilance are administered first, more interactions are produced when the ad contains a picture. When stimulus measures are administered first, significantly more interactions are produced when the ad does not contain a picture.

In general, the results support hypothesis 2. The number of interactions doubled over the delay of one week. The results also suggest that the effect of delay is moderated by the type of ad used and the order of measurement.

Hypothesis 3

Hypothesis 3 posits that over time the evaluative implications of the message (advertising goals) will become more consistent with the evaluative implications of the advertisements and overall evaluations recorded.

One way to test this hypothesis is to compute the inter-category correlations between the evaluative implications of recall, advertisements, and overall evaluations for the delay, and ad delay groups and see if the correlations between recall and advertisements, and recall and overall evaluations increase over time.

The correlations described above were computed and are presented in Table 8.VIII. As can be seen, though the

TABLE 8.17

THE MEAN NUMBER OF INTERACTIONS AS A FUNCTION OF
 (DELAY, ORDER, AND STIMULI)

	NO DELAY		DELAY	
	NO-INTERACT	INTERACT	NO-INTERACT	INTERACT
CONDITION 1ST	1.00	2.40	1.60	2.20
CONDITION 2ND	0.00	2.75	2.40	1.20

TABLE 3.18

CORRELATIONS BETWEEN RSCALE, EXTRACTIONS, AND OVERALL
EXTRACTIONS AS A FUNCTION OF DELAY

	RSCALE	
	By Delay	Delay
EXTRACTIONS	0.79 p<0.01	0.75 p<0.00
OVERALL EXTRACTIONS	0.68 p<0.10	0.68 p<0.10

recollections increase with delay, the increases are very small and not significant. Thus, the data do not support hypothesis 3.

Hypothesis 4

The hypothesis states that the number of facts recalled and the number of negative responses produced varies as a function of prior knowledge. Specifically, the number of facts recalled and single-run interpretations produced increases with expertise. The number of distortions and overall recollections is unaffected by level of expertise. The number of intrusions varies as a function of expertise.

Five, five-way ANOVAs were conducted with delay, familiarity, content, order, and stimuli as the independent variables and each of fact recall, single-run interpretations, distortions, overall recollections, and intrusions as the dependent variables. The results of the ANOVAs are presented as tables 8.01 through 8.05 and tables 8.06, 8.07.

The analyses revealed that recall increases with increasing familiarity (table 8.01, p<.001). There is no effect of familiarity on single-run interpretations, distortions, overall recollections (table 8.02), and intrusions (table 8.03, p<.001). The main number of each type of cognition as a function of familiarity is presented in table 8.04.

TABLE 8.11

MEAN RANKS OF EACH TYPE OF CREDITORS AS A FUNCTION OF FAMILIARITY

	LOW	FAMILIARITY MEDIATE	HIGH
DETAIL	6.87	8.18	8.94
RECOMMEND	1.77	1.48	2.85
ABSTRACTION	2.18	1.88	2.87
OVERALL AVG.	3.48	3.70	4.89
DIFFERENCE	1.25	1.17	1.51

Five additional Five-way ANOVAs were conducted using design, objective knowledge, context, order, and stimulus as the independent variables and each of four stimuli, single-verb interpretations, the first three, overall evaluation, and instruction as the dependent variables. Note, the only difference between the first set of five ANOVAs and those in the use of objective knowledge instead of familiarity as the operational measure of prior knowledge. The results of the analyses are presented in tables 5.10 through 5.14.

The analyses revealed a marginally significant increase in the number of facts recalled as a function of knowledge (F(4,87), p(4,87)), an increase in the number of single-verb interpretations (F(4,87), p(4,87)), an effect on the number of abstractness and overall evaluations (F(4,87), p(4,87)), and a decrease in the number of instructions (F(4,87), p(4,87)). The mean number of each type of response as a function of objective knowledge is presented in table 5.15.

Taken together, the results show mixed support for hypothesis 5. As predicted, the number of facts recalled increases with knowledge, and the number of abstractness and overall evaluations remain unaffected irrespective of the operational measure of prior knowledge used.

The number of single-verb interpretations increases with increased knowledge. However, this effect is significant

TABLE 3.20

IMPACT OF DIFFERENT SKEWNESS ON THE CHOICE OF FACTS RECOGNITION
ANALYSIS USING STATISTICAL KNOWLEDGE

DEVICE	DF	SIZE OF SQUARE	F VALUE	PROB
Delay	1	1762.148	107.123	0.00
Count	1	21.366	0.87	0.38
Delay*Count	1	0.000	0.00	0.99
Context	1	0.338	0.04	0.84
Delay*Context	1	47.446	9.18	0.00
Context*Skew	1	2.880	0.10	0.74
Delay*Context*Skew	1	2.900	0.10	0.74
Order	1	0.070	0.40	0.54
Delay*Order	1	60.110	9.07	0.00
Skew*Order	1	3.297	0.90	0.34
Delay*Skew*Order	1	0.090	0.03	0.86
Context*Order	1	0.418	0.09	0.81
Delay*Context*Order	1	1.774	0.17	0.69
Context*Skew*Order	1	19.216	0.48	0.49
Del.*Cont.*Skew*Order	1	0.400	0.04	0.84
Skew()	1	0.388	0.06	0.81
Delay*Skew()	1	10.070	1.90	0.17
Skew*Skew()	1	0.070	0.03	0.86
Delay*Skew()*Skew()	1	0.070	1.00	0.38
Context*Skew()	1	14.643	1.27	0.28
Delay*Context*Skew()	1	10.306	1.94	0.18
Context*Skew*Skew	1	0.044	0.00	0.97
Del.*Skew*Skew*Skew	1	0.044	0.02	0.88
Order*Skew()	1	0.090	0.01	0.92
Delay*Order*Skew	1	19.177	0.44	0.51
Skew*Order*Skew()	1	0.071	0.07	0.79
Del.*Skew*Order*Skew	1	0.718	0.04	0.84
Cont*Order*Skew()	1	0.000	0.00	0.99
Del.*Cont*Order*Skew	1	0.000	0.00	0.99
Cont*Skew*Cont*Skew	1	2.100	0.24	0.63
Del.*Cont*Skew*Skew	1	0.071	0.00	0.99
Error	94	168.623		

TABLE A.11

IMPACT OF INDEPENDENT VARIABLES ON THE KINDS OF ABSTRACTIONS:
ANALYSIS USING MULTIPLE REGRESSION

REGRESS	DF	SUM OF SQUARES	F VALUE	PROB
Delays	1	27.075	6.86	0.01
Error	1	0.084	0.00	0.94
Delays*Errors	1	0.095	0.00	0.97
Constant	1	0.091	0.00	0.95
Delays*Constant	1	0.754	0.00	0.95
Constant*Errors	1	0.000	0.00	0.98
Delays*Constant*Errors	1	14.007	3.53	0.07
Error	1	0.010	0.00	0.95
Delays*Error	1	0.000	0.75	0.39
Error*Errors	1	16.450	3.89	0.06
Delays*Error*Error	1	1.250	0.33	0.56
Constant*Error	1	0.000	1.07	0.31
Delays*Constant*Error	1	1.107	0.30	0.58
Constant*Errors*Errors	1	1.004	0.30	0.58
Delays*Error*Errors*Error	1	0.000	0.15	0.70
Errors	1	47.000	11.00	0.01
Delays*Errors	1	0.000	0.00	0.97
Error*Errors	1	0.115	0.00	0.93
Delays*Error*Errors	1	1.100	0.30	0.58
Errors*Error*Errors	1	0.750	0.00	0.93
Delays*Constant*Errors	1	0.000	1.31	0.25
Errors*Error*Errors*Errors	1	0.000	1.11	0.29
Delays*Error*Errors*Errors	1	0.000	0.01	0.93
Error*Errors	1	0.000	0.00	0.97
Delays*Error*Errors*Errors	1	0.000	0.00	0.95
Error*Error*Errors	1	0.000	1.01	0.32
Delays*Error*Error*Errors	1	1.100	0.20	0.65
Constant*Error*Errors	1	1.000	1.70	0.20
Delays*Constant*Error*Errors	1	10.000	3.01	0.10
Constant*Error*Errors*Errors	1	0.000	0.00	0.97
Delays*Error*Error*Errors*Errors	1	0.000	0.00	0.95
Error	16	400.000		
Constant*Error	127	0.00000		

TABLE 8.23

IMPACT OF INDEPENDENT VARIABLES ON THE NUMBER OF OVERALL EVALUATIONS
ANALYSIS USING RELATIVE ESTIMATES

SOURCE	DF	SUM OF SQUARES	F VALUE	MEAN
Delay	1	0.109	0.00	0.10
Time	1	0.113	0.05	0.10
Delay*Time	1	0.099	0.03	0.09
Context	1	0.001	0.00	0.00
Delay*Context	1	0.000	0.01	0.00
Context*Time	1	0.000	1.00	0.00
Delay*Context*Time	1	0.000	0.00	0.00
Gender	1	0.004	0.00	0.00
Delay*Gender	1	0.000	0.00	0.00
Time*Gender	1	0.000	0.00	0.00
Delay*Time*Gender	1	0.001	0.00	0.00
Context*Gender	1	0.000	0.00	0.00
Delay*Context*Gender	1	0.000	0.00	0.00
Context*Time*Gender	1	0.000	0.00	0.00
Delay*Time*Context*Gender	1	0.000	0.00	0.00
Visual1	1	0.000	0.00	0.00
Delay*Visual1	1	0.000	0.00	0.00
Time*Visual1	1	0.000	0.00	0.00
Context*Visual1	1	0.000	0.00	0.00
Delay*Context*Visual1	1	0.000	0.00	0.00
Context*Time*Visual1	1	0.000	0.00	0.00
Delay*Time*Visual1	1	0.000	0.00	0.00
Context*Visual1*Gender	1	0.000	0.00	0.00
Delay*Context*Visual1*Gender	1	0.000	0.00	0.00
Context*Time*Visual1*Gender	1	0.000	0.00	0.00
Delay*Time*Context*Visual1*Gender	1	0.000	0.00	0.00
Visual2	1	0.000	0.00	0.00
Delay*Visual2	1	0.000	0.00	0.00
Time*Visual2	1	0.000	0.00	0.00
Context*Visual2	1	0.000	0.00	0.00
Delay*Context*Visual2	1	0.000	0.00	0.00
Context*Time*Visual2	1	0.000	0.00	0.00
Delay*Time*Visual2	1	0.000	0.00	0.00
Context*Visual2*Gender	1	0.000	0.00	0.00
Delay*Context*Visual2*Gender	1	0.000	0.00	0.00
Context*Time*Visual2*Gender	1	0.000	0.00	0.00
Delay*Time*Context*Visual2*Gender	1	0.000	0.00	0.00
Error	99	71.000		
Unexplained (Total)	100	71.100		

TABLE 4.15

EFFECT OF INDEPENDENT VARIABLES ON THE NUMBER OF INTRUSIONS,
ADULTS (1970) (FUNCTION: INTRUSIONS)

SOURCE	DF	SSN OF SQUARES	F VALUE	PROB
Total	1	25.143	21.09	0.01
Error	1	0.797	4.05	0.03
24 Day*Time	1	0.7542	1.59	0.16
ConWeek	1	4.398	3.37	0.07
Day*ConWeek	1	0.048	0.05	0.83
ConWeek*Time	1	1.835	1.01	0.32
Day*ConWeek*Time	1	0.000	0.00	0.96
Order	1	0.110	0.14	0.71
Day*Order	1	0.096	0.14	0.71
Time*Order	1	0.098	1.01	0.32
Day*Time*Order	1	3.135	0.42	0.52
ConWeek*Order	1	10.041	6.00	0.01
Day*ConWeek*Order	1	1.038	1.05	0.31
ConWeek*Time*Order	1	4.460	1.43	0.24
Day*Time*ConWeek*Order	1	0.801	0.19	0.66
DisWeek1	1	0.753	0.13	0.74
Day*DisWeek1	1	0.108	0.08	0.77
Time*DisWeek1	1	1.033	1.19	0.28
Day*Time*DisWeek1	1	1.014	1.18	0.28
ConWeek*DisWeek1	1	0.060	0.00	0.97
Day*ConWeek*DisWeek1	1	0.031	0.19	0.66
Time*ConWeek*DisWeek1	1	3.037	0.19	0.66
Day*Time*ConWeek*DisWeek1	1	0.091	0.02	0.87
Order*DisWeek1	1	0.113	0.07	0.71
Day*Order*DisWeek1	1	3.130	0.15	0.70
Time*Order*DisWeek1	1	4.391	1.43	0.24
Day*Time*Order*DisWeek1	1	0.001	0.00	0.97
ConWeek*Order*DisWeek1	1	1.005	1.04	0.31
Day*ConWeek*Order*DisWeek1	1	0.031	0.13	0.71
Time*ConWeek*Order*DisWeek1	1	0.764	1.08	0.30
Day*Time*ConWeek*Order*DisWeek1	1	0.000	0.00	0.97
Error	98	13.401		
Unexplained Total	100	21.100		

NOTE: THE SOURCE OF THE INTRUSIONS DATA IS THE NATIONAL BUREAU OF ECONOMIC RESEARCH, UNIVERSITY OF CHICAGO, CHICAGO, ILL.

TABLE 8.22

MEAN RANKS OF EACH TYPE OF QUESTION AS A PORTION OF
OBJECTIVE KNOWLEDGE

	OBJECTIVE KNOWLEDGE	
	LOW	HIGH
OVERALL	7.37	8.45
STUDY-CON	7.43	8.52
ASSESSMENT	5.89	8.37
OVERALL TOTAL	6.67	8.47
INTRODUCTION	7.89	7.12

only when objective knowledge is used as the operational measure. Finally, the number of judgments decreases with increasing knowledge. Again, the effect remains significant only when objective knowledge serves as the operational measure.

Thus, the results are sensitive to the operational measure of prior knowledge used. One reason could be that the self-rated measure of familiarity is not a pure measure. It confounds true knowledge with the respondent's belief about his/her knowledgeability. However, the measure of objective knowledge does not suffer from this drawback. The issue is taken up in detail in Chapter Nine.

THE RELATIONSHIP BETWEEN PRIOR, COGNITIVE, EMOTIONAL AND BEHAVIORAL

DETERMINATION OF AN APPROPRIATE OPERATIONAL MEASURE

The first question of importance in addressing the cognition-attitude relationship was to identify the operational measures that provided attitude best. Four operationalizations of each category of cognition were assessed. They were the sum of the evaluative implications of the responses, the sum of the evaluative implications weighted by the importance of each response, the average evaluative implication, and the weighted average evaluative implication. In addition, for the restricted items, four further measures were assessed. Instead of items recalled,

the sum of the evaluative implications, the sum of the evaluative implications of the items recalled weighted by belief strength, and the average evaluative implication weighted by belief strength. Finally, the number of CR and NI were also considered.

Correlations were computed between each operational measure for each category of negative and positive. The correlations are presented in Table 8.21. As can be seen, the number of items recalled does not correlate with attitudes. A finding repeatedly obtained by past research.

The correlations also show that in each case the sum score performed marginally better than the average score. The only exception is for attributions. However, the differences are not significant. Finally, notice the weighted sum of the weighted scores performs consistently better across all categories. In view of these results, the summed evaluative implication of the items in each category seems to be the most appropriate operationalization of the independent variable for use in further analysis.⁵

The Mediating Role of Belief, Knowledge, and Context

In this section, the relationship between the cognitive categories and attitudes are examined, and the role of belief, prior knowledge about the product category, and contextual

TABLE 9.25

TRANSFORMED WITH STRETCH

	Age of Independent Variables	Average Predictive Squid Correlation	Age of Weighted Predictive Variables Correlation	Average Weighted Predictive Variables Correlation	Ratio of 1000	Weight Weighted Predictive Variables
Intercept	0.21 p=0.01	0.23 p=0.04	0.21 p=0.01	0.21 p=0.01	0.71 p=0.15	0.21 p=0.01
Age (18-24)	0.22	0.19	0.22	0.19		
Total population	p=0.01	p=0.04	p=0.01	p=0.02		
Male population	0.19 p=0.04	0.16 p=0.03	0.16 p=0.01	0.15 p=0.04		
Female population	0.16 p=0.01	0.07 p=0.05	0.16 p=0.01	0.16 p=0.01		
Latvian population	-0.06 p=0.70	-0.01 p=0.95	0.06 p=0.10	0.06 p=0.10		
Female population	0.21 p=0.01	0.15 p=0.03	0.21 p=0.01	0.16 p=0.04	0.28 p=0.01	
Gender- population	-0.15 p=0.01	-0.11 p=0.03	-0.15 p=0.01	-0.15 p=0.01	-0.17 p=0.01	

0.1 weighted by age
0.1 weighted by income strength

information is irrelevant. In particular, hypotheses H_1 , H_2 , T_1 , and T_2 are irrelevant.

The statistical approach best suited to address the problem appeared to be linear regression. There were three approaches that could have been used. The first approach required a pair of models to be submitted to test each hypothesis. For example, to test the impact of contextual information on the recall-attitude relationship, one model would contain all the design factors, the associative implications of recall, and the recall by context interaction term. The other model would contain all the elements of the first, but exclude the recall by context interaction term. The hypothesis could then be tested by comparing the variance explained by the models.

The second approach involves a regression model that included all the design factors, all the categories of cognitive responses, and all predicted interactions. This would serve as the full model, and would be compared against a version of reduced models that excludes a specific interaction.

The third approach takes the middle ground. Under this approach, a regression model is estimated containing all the design factors, all predicted interactions, but the main effects of only those cognitive categories that pass through

criteria: (i) the main effect of the category is of theoretical importance, (ii) the effect is significant at the 5% level, and (iii) the term may be dropped from the model without significantly increasing the sum of squares for any of the other effects. This goal can then be explored with a series of models excluding the specific effect of interest.

Of these three approaches, the third approach and the most appealing because of a number of reasons:

(i) Compared to the first it is more conservative, and reduces the likelihood of errors due to model mis-specification. That is, when one of the independent variables is correlated with one of the qualitative categories that are not included in the model, the likelihood term may spuriously appear to be significant because it was capitalizing on the shared variance. Thus, the null hypothesis may be rejected erroneously.

(ii) The third approach, though more conservative than the second, is more preferable because it does not include variables that unnecessarily use up degrees of freedom without accounting for variance in the data. Thus, this approach provides more power. In addition, the criteria used is focusing

variables were those in which no variables are dropped that have a large shared variance with another variable.

Based on this rationale, a regression model was developed using the third approach. The two terms that were dropped were single-use (interactions) and (dropping as they did not contribute to the model, and their inclusion did not affect the statistical robustness of the resulting estimates. When the results differ substantially between the third approach and used instead of the second, the differences are indicated in parentheses.

The regression model was estimated using the OLS procedure available in SAS. One main feature of this approach is that separate regression models need not be estimated. Instead, the Type III sum-of-squares provides a test of each effect in the model given that all other effects are already in the model. The results of the analysis and the Type III sum-of-squares are presented in table A17.

The first step was to test whether the model including the interactions explained significantly more variance than the model including all interactions. A comparison of the models revealed the full model (4%) the model including interactions, to be significantly better than the reduced model (F(1,127, p<0.001). Now, the specific hypotheses

TABLE 1.21

FULL MODEL WITH PARALLELITY

MODEL	df	TYPE III SS	F VALUE	PROB
Intercept	1	0.00	0.00	0.94
Post1	2	3.49	3.49	0.03
Intercept*Post1	2	0.07	0.07	0.91
Control1	1	0.49	0.11	0.73
Intercept*Control1	1	0.49	0.49	0.48
Control1*Post1	2	0.22	0.22	0.79
Intercept*Control1*Post1	2	1.21	1.21	0.30
Order	1	1.53	3.39	0.07
Intercept*Order	1	1.56	3.43	0.06
Post1*Order	2	0.41	0.41	0.66
Intercept*Post1*Order	2	0.79	0.30	0.73
Control1*Order	1	0.83	1.88	0.16
Intercept*Control1*Order	1	0.38	0.77	0.38
Control1*Post1*Order	2	0.34	0.30	0.73
Intercept*Control1*Post1*Order	2	0.03	0.03	0.97
Order1	1	0.47	0.04	0.84
Intercept*Order1	1	0.34	0.44	0.50
Post1*Order1	2	0.73	0.13	0.87
Intercept*Post1*Order1	2	0.01	0.00	0.97
Control1*Order1	1	1.04	0.03	0.71
Intercept*Control1*Order1	1	0.30	0.23	0.63
Control1*Post1*Order1	2	0.47	1.47	0.23
Intercept*Control1*Post1*Order1	2	0.77	0.07	0.93
Order1*Order1	1	0.39	0.48	0.49
Intercept*Order1*Order1	1	0.70	0.23	0.63
Post1*Order1*Order1	2	0.39	0.39	0.66
Intercept*Post1*Order1*Order1	2	0.07	0.04	0.94
Control1*Order1*Order1	1	0.01	0.23	0.63
Intercept*Control1*Order1*Order1	1	0.17	0.05	0.82
Post1*Control1*Order1*Order1	2	0.01	0.23	0.63
Intercept*Post1*Control1*Order1*Order1	2	0.19	0.39	0.59
Error1	1	0.65	0.03	0.87
Error2	1	0.00	0.01	0.93
Error3	1	0.00	0.00	0.94
Error4 = (Intercept)	2	0.01	0.23	0.79
Error5 = (Intercept)	2	0.00	0.00	0.91
Error6 = (Intercept)	1	0.00	0.00	0.94
Error7 = (Intercept)	1	0.46	0.10	0.73
Error8 = (Intercept)	2	0.63	0.05	0.94
Error9 = (Intercept*Post1)	4	1.28	0.43	0.86
Error10 = (Intercept*Post1)	4	0.03	0.03	0.97
Error11 = (Intercept*Post1)	4	0.13	1.07	0.37
Error12 = (Intercept*Post1)	2	0.77	2.77	0.07
Error13 = (Intercept*Post1)	2	0.00	0.00	0.94
Error14 = (Intercept*Post1)	2	0.14	0.09	0.94
Error	41	90.07	$F^2=0.076$, $p=0.01$	

1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11) 12) 13) 14) 15) 16) 17) 18) 19) 20) 21) 22) 23) 24) 25) 26) 27) 28) 29) 30) 31) 32) 33) 34) 35) 36) 37) 38) 39) 40) 41)

presented in Chapter Five can be evaluated by considering each of the interaction terms.

Before looking at the interactions, however, it is interesting to note that the impact of abstractions on attitude becomes negligible once the interaction terms have been included. However, recall and overall evaluations remain as important predictors of attitude.

Hypothesis 4

Hypothesis 4 posited that over time the importance of abstractions and overall evaluations as predictors of attitude increases. To test hypothesis 4, two interactions with delay had been included in the models: delay x abstraction and delay x overall evaluations. An examination of the Type III sum-of-squares (SS) reveals that the delay by abstraction interaction is significant ($F(1,21)$, $p < .001$) but not the delay by overall evaluations interaction (NS).

To understand the nature of the interaction, three regression models were calculated, one for each delay group. The models included recall, abstractions, and overall evaluations as the predictor variables and attitude as the criterion variable. The results are presented in table 8.2B.

An examination of the regression coefficients for abstractions in each of the three delay conditions revealed that there was no difference in the sign of the regression

TABLE 5.44

REGRESSION OF WEIGHT, SUBTRACTIONS, AND OVERALL ESTIMATIONS
ON ATTITUDE AT EACH LEVEL OF SCALE

1. NO-DELAY CONDITION

| SOURCE | df | TYPE III SS | F VALUE | MEAN |
|-----------------|----|-------------|---------|------|
| Model | 1 | 1.79 | 6.66 | 6.08 |
| Adjustments | 1 | 6.66 | 6.07 | 6.01 |
| Overall Error | 1 | 6.19 | 76.68 | 6.04 |
| Error | 88 | 17.88 | | |
| Corrected Total | 91 | 24.87 | | |

R² = 0.44, p < 0.001

| PARAMETER | ESTIMATE | T | PROB | STD. ERROR |
|---------------|----------|------|------|------------|
| Model | 0.007 | 0.17 | 0.87 | 0.0271 |
| Adjustments | 0.006 | 0.03 | 0.97 | 0.0231 |
| Overall Error | 0.002 | 0.02 | 0.98 | 0.0291 |

TABLE 4.15 (CONTINUED)

II. BECAT CONDITION

| SOURCE | DF | TYPE III SS | F VALUE | PR>F |
|-----------------|----|-------------|---------|------|
| Model | 1 | 1.05 | 1.05 | 0.30 |
| Intercept/sex | 1 | 1.05 | 1.05 | 0.30 |
| Overall Error | 1 | 1.05 | 1.05 | 0.30 |
| Error | 84 | 10.71 | | |
| Corrected Total | 85 | 11.77 | | |

R²=0.08, 30%df

| PARAMETER | ESTIMATE | T | PR>T | 95% Bound |
|------------------|----------|------|------|-----------|
| Model | 0.000 | 1.00 | 1.00 | 0.000 |
| Intercept/sex | 0.000 | 1.00 | 1.00 | 0.000 |
| Overall Deviance | 0.00 | 1.00 | 1.00 | 0.000 |

TABLE 6.20 CONTINUED

III. GALIANO-ADDITION CORRECTION

| SOURCE | DF | MEQ. IV SS | F VALUE | PGOF |
|-----------------|----|------------|---------|------|
| Model1 | 1 | 8.14 | 4.73 | 0.04 |
| Stratification | 1 | 0.08 | 0.00 | 0.93 |
| Overall Total | 1 | 2.88 | 1.60 | 0.20 |
| Error | 54 | 25.04 | | |
| Corrected Total | 55 | 25.12 | | |

R² = 0.24

| PARAMETER | COEFFICIENT | T | PGOF | 95% CONFID. |
|----------------|-------------|------|------|-------------|
| Model1 | 0.047 | 0.00 | 0.04 | 0.974 |
| Stratification | 0.001 | 0.01 | 0.91 | 0.007 |
| Overall Total | 0.004 | 0.00 | 0.00 | 0.000 |

sufficient in the delay (the group in which subjects saw the ad during the first session and responded to all the negative and attitude measures during the second session) and memory (the group in which subjects responded to all the measures during the first session groups). However, in the delayed-attitude group (the group in which subjects responded to negative measures during session one and attitude measures during session two), the coefficient was even smaller (but compared to 80%). Thus, the interaction is not of the type hypothesized and, therefore, hypothesis 5 is not supported.

It is interesting, that both the immediate implications of facts recalled and observations recalled at the time of decision making are good predictors of attitudes both immediately after exposure to the advertisement and after a one week delay. This finding is consistent with the availability-primacy hypothesis (Tversky and Shafir, 1989; Shafir and Tversky, 1984, 1985).

Conclusion 5

Hypothesis 5 posited that when information on competing brands is available, recall is more important and observations and overall evaluation are less important as predictors of attitudes. When information on competing brands is not available, recall is less important and observations

and overall evaluations are more important in predicting \hat{Q} ratings.

Operationally, this hypothesis translates into three interactions between context and each of Felt overall, abstractness, and overall evaluations. Examination of the three interaction terms in the model revealed that only the context by abstractness interaction reached significance ($F(4,1) = 6.648$) but not the other two interactions ($F(4,1) = 0$).

In delineation of the interaction map of the form hypothesized, separate regressions were run for each level of context with ratings as the criterion and overall, abstractness, and overall evaluations as the predictors. The results are presented in table 8.10.

In examination of the regression coefficients (β) for abstractness for each level of context shows that no significant differences are detected in predictions of ratings when contextual information is absent ($\beta = .07$, $t(17) = 1.04$) but not when it is present ($\beta = .25$, $t(17) = 2.17$).

It is interesting that the regression coefficients for overall evaluations in the two context conditions are consistent with expectations. In the presence of contextual information, the regression coefficients are smaller ($\beta = .04$) in the context condition and $\beta = .22$ in the no context condition. Thus, hypothesis 4 is partially supported.

TABLE 3.25

NUMBER OF MISSES, INSTRUCTIONS AND SPECIAL INSTRUCTIONS
ON AVERAGE AT EACH LEVEL OF COMPLEXITY

3. IN CORRECT CONDITION

| ADDRESS | OF | TYPE OF MS | IF VALUE | PERCENT |
|------------------|----|------------|----------|---------|
| Base[1] | 1 | 0.80 | 1.80 | 0.08 |
| Instruction[1] | 1 | 0.70 | 18.10 | 0.07 |
| Branch[1] Eval. | 1 | 1.00 | 19.00 | 0.04 |
| Error | 86 | 0.11 | | |
| Normalized Total | 47 | 0.67 | | |

| PARAMETER | ESTIMATE | T | PERCENT | PERCENT ERROR |
|-----------------|----------|------|---------|---------------|
| Base[1] | 0.800 | 1.28 | 0.08 | 0.011 |
| Instruction[1] | 0.694 | 4.08 | 0.07 | 0.010 |
| Branch[1] Eval. | 0.100 | 3.30 | 0.04 | 0.017 |

TABLE A.21 (CONTINUED)

II- CONTRAST COEFFICIENT

| SOURCE | DF | TYPE III SS | F VALUE | PR > F |
|-----------------|----|-------------|---------|--------|
| Model1 | 1 | 6.28 | 15.75 | 0.01 |
| Interactions | 1 | 0.00 | 0.01 | 0.92 |
| Overall Error | 1 | 7.61 | 19.00 | 0.01 |
| Error | 88 | 76.07 | | |
| Corrected Total | 89 | 84.08 | | |

| PARAMETER | ESTIMATE | T | PR > T | 95% CI FOR |
|---------------|----------|------|--------|------------|
| Model1 | 6.280 | 5.85 | 0.01 | 0.870 |
| Interactions | 0.000 | 0.19 | 0.85 | 0.000 |
| Overall Error | 6.715 | 5.75 | 0.01 | 0.880 |

Hypothesis 2

Hypothesis 2 posits that relative to each other, experts and novices rely differentially on recall, observations, and overall evaluations in making an individual judgment when the judgment follows immediately after an exposure. However, after a delay both experts and novices are forced to rely more on observations and overall evaluations in making an individual judgment. Thus, three interactions between each of recall, observations, and overall evaluations and the delay by familiarity information were posited in Hypothesis 1.

The analysis revealed that none of the interactions reached significance (10%). However, it must be noted that an examination of the regression coefficients for separate words indicated for each of four conditions defined by the two levels of delay and the expert and novice groups revealed the pattern of regression coefficients for observations and overall evaluations to be consistent with prior expectations (see table A.5). That is, the regression coefficients were different across levels of expertise in the no-delay condition but not in the delay condition.

Hypothesis 3

Hypothesis 3 posits that the relative importance of recall, observations, and overall evaluations as predictors

TABLE 9.30

COMPARISON OF EDUCATION VECTORS ACROSS GROUP DIVIDED BY
LEVELS OF PAPERBARK AND DELAY

| DELAY | EDUCATION | NOVICE | EXPERT |
|----------|--------------|--------|--------|
| NO DELAY | Novice | .05 | .04 |
| | Intermediate | .05 | .06 |
| | Expert Eval. | .09 | .09 |
| DELAY | Novice | .05 | .04 |
| | Intermediate | .04 | .06 |
| | Expert Eval. | .04 | .06 |

of attitude depends on the availability of information on competing brands and the reputation of the domain owner. Specifically, a test of this hypothesis translated to an examination of three interactions: recall \times context \times familiarity, distractors \times context \times familiarity, and overall evaluations \times context \times familiarity.

The analysis revealed the recall \times context \times familiarity interaction to be marginally significant ($p < .07$, $p < .07$) when the regression model was estimated using the logic of method B. This interaction was significant at $p < .02$. This interaction was further analyzed by looking at the correlations between recall and attitude for each of six groups obtained by partitioning the data by level of familiarity (2 levels) and level of context (3 levels). The correlations are presented in table 4.11. As can be seen, the correlations do not differ as a function of context in the low and medium knowledge groups but there is a large difference in the high knowledge group. When contextual information is present, the correlation is weak and significant ($r = .42$, $p < .01$). When there is no contextual information present, the correlation is weak and insignificant ($r = .16$, $p < .10$). Thus, hypothesis 3 receives partial support.

TABLE 3.12

CORRELATION BETWEEN RECALL AND ATTITUDE:
SPICES OF CONTENT AND FAMILIARITY

| | CONTENT | NO. CONTENT |
|-----------------|----------------|----------------|
| RECALL | 0.45
p<0.05 | 0.38
p<0.05 |
| MODERATE FAMIL. | 0.35
p<0.05 | 0.25
p<0.05 |
| EXPERT | 0.15
p<0.10 | 0.45
p<0.05 |

Before moving on to the next section, it is noteworthy that when a regression model was estimated using subjective knowledge (instead of familiarity as a design factor) and the eight variables contained the model, the main effects of recall, elaboration, and overall evaluations showed the same pattern as they did when familiarity was used. Though none of the interactions reached significance, there were marginally significant interactions corresponding to the interactions that reached significance when familiarity was used (see table 5.2). Finally, it must be acknowledged that the model including the interactions did not explain significantly more variance than the model including interactions (21).

Comparison of the Proposed Categories with the Traditional Categories

In this research, a new coding scheme was proposed for coding cognitive responses. In Chapter Three, it was suggested that the proposed scheme was more detailed and, therefore, may provide better predictive power.

The regression models were estimated with all nine as the dependent measure and the design factors, recall, and categories of cognitive response as the independent variables. The only difference in the two models was in the cognitive response categories used as predictors. In one model, the traditional categories of counterargument and

support arguments⁸ were used. In the other, the arguments single-use interpretations, abstractions, overall evaluations, and instructions were used as predictors. Essentially, the two models incorporated the effects of the same cognitive processes coded differently.

Both models were first compared in a naive model containing only the design factors. Both models were found to explain significantly more variance than the naive model (naive with traditional categorization $r^2=.40$, $p<.01$; naive with proposed categorization $r^2=.43$, $p<.01$). The results of the estimation of the naive model, the model with traditional cognitive response categorization, and the model with the proposed cognitive response categorization are presented in table 3.21.

Though no statistically correct methods of comparing the two models exist, two approaches were adopted to see if either model performed consistently better.

First, the R^2 values of the two models were compared. The model containing the traditional categorization had an R^2 value of .415 and the model containing the proposed categorization had an R^2 value of .418. Thus, the model containing the proposed categorization explains a greater proportion of the variance in attitude scores.

TABLE 3.23

(C) NAIVE MODEL: INCLUDED MAIN FACTORS ONLY

| SOURCE | DF | TYPE III SS | F VALUE | Prob |
|----------------------------|-----|-------------|---------|------|
| Model | 1 | 1.851 | 2.43 | 0.12 |
| Error | 2 | 0.758 | 1.00 | 0.37 |
| Total | 3 | 2.609 | 1.82 | 0.19 |
| Corrected | 1 | 0.004 | 0.01 | 0.93 |
| Delay*Gender | 1 | 0.007 | 0.01 | 0.92 |
| Cost*SL*Speed | 2 | 0.445 | 2.40 | 0.11 |
| Delay*Cost*Speed | 2 | 0.288 | 0.19 | 0.83 |
| Error | 1 | 0.714 | 1.00 | 0.31 |
| Delay*Error | 1 | 1.801 | 2.21 | 0.15 |
| Fast*Error | 2 | 0.800 | 0.20 | 0.83 |
| Delay*Fast*Error | 2 | 0.045 | 0.04 | 0.95 |
| Distance*Error | 1 | 0.143 | 0.19 | 0.67 |
| Delay*Distance*Error | 1 | 0.075 | 0.04 | 0.83 |
| Distance*Fast*Error | 2 | 0.033 | 0.19 | 0.83 |
| Delay*Cost*Fast*Error | 2 | 0.114 | 1.00 | 0.36 |
| SL*Cost | 1 | 0.091 | 0.28 | 0.60 |
| Delay*SL*Cost | 1 | 0.189 | 0.26 | 0.61 |
| Fast*SL*Cost | 2 | 0.070 | 0.10 | 0.93 |
| Delay*Fast*Cost | 2 | 0.280 | 0.05 | 0.98 |
| Distance*SL*Cost | 1 | 0.305 | 0.43 | 0.51 |
| Delay*Distance*Cost | 1 | 0.077 | 0.10 | 0.73 |
| Distance*Fast*Cost | 2 | 0.789 | 0.01 | 0.99 |
| Delay*Fast*Cost | 2 | 0.004 | 0.00 | 0.99 |
| Order*SL*Cost | 1 | 0.326 | 0.43 | 0.51 |
| Delay*Order*Cost | 1 | 0.001 | 0.12 | 0.73 |
| Fast*Order*Cost | 2 | 0.138 | 0.09 | 0.91 |
| Delay*Fast*Order*Cost | 2 | 0.031 | 0.04 | 0.71 |
| Distance*Order*Cost | 1 | 0.103 | 0.10 | 0.73 |
| Delay*Cost*Order*Cost | 1 | 0.010 | 0.00 | 0.99 |
| Cost*Fast*Order*Cost | 2 | 0.779 | 0.01 | 0.99 |
| Delay*Cost*Fast*Order*Cost | 1 | 0.001 | 0.00 | 0.99 |
| Error | 117 | 88.292 | | |
| Unexplained Total | 120 | 126.214 | | |

R²=0.211, p<0.01

TABLE 4.31 CONTINUED

CONVENTIONAL MODEL-ENCLOSURE SIGNALS WITH 100 DEGREES AND BEFORE AMOUNTS

| SOURCE | df | TYPE III SS | F VALUE | PROB |
|-----------------------------------|-----|-------------|---------|------|
| De Day | 1 | 0.000 | 0.00 | 0.99 |
| Real() | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*PVar1 | 2 | 0.000 | 0.00 | 0.99 |
| Convent | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent | 1 | 0.000 | 0.00 | 0.99 |
| Convent*PVar1 | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*PVar1 | 2 | 0.000 | 0.00 | 0.99 |
| Order | 1 | 1.121 | 1.09 | 0.30 |
| De Lay*Order | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Order | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*PVar1*Order | 2 | 0.000 | 0.00 | 0.99 |
| Convent*Order | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*Order | 1 | 0.000 | 0.00 | 0.99 |
| Convent*PVar1*Order | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*PVar1*Order | 2 | 0.000 | 0.00 | 0.99 |
| Model1 | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| PVar1*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*PVar1*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| Convent*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Convent*PVar1*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*PVar1*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Real*Order*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| De Lay*Real*Order*Model1 | 2 | 0.000 | 0.00 | 0.99 |
| Convent*Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Convent*PVar1*Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| De Lay*Convent*PVar1*Order*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Convent*PVar1*Model1 | 1 | 0.000 | 0.00 | 0.99 |
| Support1 Argonide | 1 | 0.000 | 0.00 | 0.99 |
| Error | 114 | 81.893 | | |
| Corrected Total | 115 | 104.000 | | |

R-SQUARED, P<0.05

The second approach involved calculating the proposed (e.g., abstractness) and traditional (e.g., CE) categories into one regression model, and then comparing how much incremental variance was accounted for by the proposed and traditional categories. This was done in two ways. First, a regression model was developed that combined the negative response categories traditionalism and CE, to not CE and the proposed categories of abstractness and overall evaluations. Single-one interactions and interactions were not included as they did not reach approach significance in the base model presented in table 4.18. The variance explained by this model was 35% ($R^2=0.35$). Also, even though abstractness and overall evaluations entered into the model last, both variables accounted for a significant amount of variance (see table 4.19; abstractness: $F(1,11)$, $p<0.05$; overall evaluations: $F(1,11)$, $p<0.05$).

The second regression model combined counterargument, support argument, and abstractness. Overall evaluations were included both as a separate category and also from counterargument and support argument further, meaning overall evaluations had been coded as support argument and negative overall evaluations had been coded as counterargument. The model is presented in table 4.20. As can be seen, abstractness account for a significant portion

TABLE A.3.1

MODEL INCLUDING DESIGN FACTORS,
 RECORD, GA, SA, ABSTRACTING AND OVERALL EVALUATING

| DESIGN | DF | TYPE IV SS | F VALUE | P > F |
|------------------------------------|-----|------------|---------|-------|
| CONCEPT | 1 | 8.895 | 5.18 | 0.02 |
| RELAT*CONCEPT | 1 | 5.175 | 8.35 | 0.00 |
| CONCEPT*FAMIL | 2 | 5.295 | 5.87 | 0.00 |
| RELAT*CONCEPT*FAMIL | 2 | 5.110 | 5.19 | 0.00 |
| ORDER | 1 | 5.295 | 9.14 | 0.00 |
| RELAT*ORDER | 1 | 5.777 | 1.43 | 0.23 |
| FAMIL*ORDER | 2 | 5.110 | 5.17 | 0.00 |
| RELAT*FAMIL*ORDER | 2 | 5.655 | 5.65 | 0.00 |
| CONCEPT*ORDER | 1 | 5.733 | 5.25 | 0.02 |
| RELAT*CONCEPT*ORDER | 1 | 1.254 | 0.27 | 0.61 |
| CONCEPT*FAMIL*ORDER | 2 | 5.593 | 5.89 | 0.00 |
| RELAT*CONCEPT*FAMIL*ORDER | 2 | 1.492 | 1.27 | 0.28 |
| FF*FAMIL | 1 | 5.855 | 4.15 | 0.04 |
| RELAT*FF*FAMIL | 1 | 5.875 | 5.19 | 0.00 |
| FAMIL*FF*FAMIL | 2 | 5.385 | 5.25 | 0.00 |
| RELAT*FAMIL*FF*FAMIL | 2 | 5.433 | 5.28 | 0.00 |
| CONCEPT*FF*FAMIL | 1 | 5.270 | 5.87 | 0.00 |
| RELAT*CONCEPT*FF*FAMIL | 1 | 5.434 | 5.95 | 0.00 |
| CONCEPT*FAMIL*FF*FAMIL | 2 | 5.299 | 5.13 | 0.00 |
| RELAT*CONCEPT*FAMIL*FF*FAMIL | 2 | 5.354 | 5.81 | 0.00 |
| ORDER | 1 | 5.433 | 1.71 | 0.09 |
| RELAT*ORDER*FF*FAMIL | 1 | 5.852 | 5.78 | 0.00 |
| FAMIL*ORDER*FF*FAMIL | 2 | 5.177 | 5.74 | 0.00 |
| RELAT*FAMIL*ORDER*FF*FAMIL | 2 | 5.610 | 5.85 | 0.00 |
| CONCEPT*ORDER*FF*FAMIL | 1 | 5.383 | 5.89 | 0.00 |
| RELAT*CONCEPT*ORDER*FF*FAMIL | 1 | 5.286 | 5.84 | 0.00 |
| CONCEPT*FAMIL*ORDER*FF*FAMIL | 2 | 5.374 | 5.88 | 0.00 |
| RELAT*CONCEPT*FAMIL*ORDER*FF*FAMIL | 1 | 5.685 | 5.85 | 0.00 |
| FF*FAMIL | 1 | 5.445 | 5.37 | 0.00 |
| ORDER*FF | 1 | 1.512 | 0.85 | 0.35 |
| RELAT*FF | 1 | 5.255 | 5.85 | 0.00 |
| FF*FAMIL | 1 | 5.885 | 5.88 | 0.00 |
| FF*FAMIL | 1 | 5.671 | 1.70 | 0.19 |
| TOTAL | 132 | 82.555 | | |

Adjusted R² = 0.59

Adjusted R² = 0.59

of the residual variance after the effects of contemporaneous and support arguments have been partialled out (Model 1, p.104). However, contemporaneous and support arguments do not account for any of the residual variance once the effect of abstractions has been partialled out (Model 2, p.105, p.112).

Thus, these results strongly support the position that the proposed coding scheme is a better predictor of attitudes. In fact, abstractions alone predicts more variance in the attitude data than CM and IM combined.⁵ Also, according to earlier research, this result is found to be important as a predictor of attitudes.

To further test the advantages of the proposed scheme, two sets of three regression models, a pair for each level of delay, were developed. In one model result, CM and IM served as predictors. In the other result, abstractions, and overall evaluations served as predictors. The variance explained by each model and the effect of each predictor at each level of delay is presented in table 4.3.

The most interesting finding is that the code(s) containing abstractions and overall evaluations performed consistently better than the code(s) containing the traditional categories. The superior performance of the proposed categories was most

TABLE 1.3

1. VARIATION OF SCALE, COORDINATE, AND SUPPORT ARGUMENTS
IN ATTITUDE AT EACH LEVEL OF DELAY

3- NO DELAY CONDITION

| SOURCE | DF | TRE DF SS | F VALUE | PR>F |
|-------------------|----|-----------|---------|------|
| Scale | 1 | 4.00 | 0.48 | 0.63 |
| Coordinates | 1 | 0.75 | 19.25 | 0.01 |
| Support Arguments | 1 | 0.06 | 0.28 | 0.61 |
| Error | 88 | 17.80 | | |
| Corrected Total | 91 | 22.61 | | |

$R^2=0.44$, $p<0.01$

| PARAMETER | ESTIMATE | T | PR>T | 95% BOUND |
|-------------------|----------|------|------|-----------|
| Scale | 0.000 | 0.70 | 0.48 | 0.000 |
| Coordinates | 0.000 | 0.00 | 0.99 | 0.000 |
| Support Arguments | 0.075 | 0.03 | 0.97 | 0.071 |

TABLE A.10. CONTINUED

21. DELAY CONDITION

| SOURCE | df | TYPE III SS | F VALUE | PROB |
|---------------------|----|-------------|---------|------|
| Block | 1 | 8.42 | 0.72 | 0.39 |
| QuadraticPolynomial | 1 | 1.07 | 0.07 | 0.80 |
| Support Arguments | 1 | 8.42 | 0.72 | 0.39 |
| Error | 68 | 95.99 | | |
| Corrected Total | 71 | 105.48 | | |

R Squared = 0.041

| POLYNOMIAL | ADJUSTED R | F | PROB | 95% CONF |
|---------------------|------------|------|------|----------|
| Block | 0.011 | 0.42 | 0.52 | 0.001 |
| QuadraticPolynomial | 0.008 | 1.01 | 0.32 | 0.001 |
| Support Arguments | 0.029 | 0.81 | 0.37 | 0.013 |

TABLE 1.14. CONTINUED

III. DELAYED-OTTENBEI CONDUCTION

| SOURCE | df | MSB (F R SS) | F VALUE | PROB |
|---------------------|----|--------------|---------|------|
| Block | 1 | 1.44 | 6.08 | 0.02 |
| Quadratic Arguments | 2 | 0.91 | 1.80 | 0.18 |
| Support Arguments | 1 | 0.87 | 0.43 | 0.51 |
| Error | 44 | 24.80 | | |
| Corrected Total | 47 | 26.03 | | |

R² = 0.19, p = 0.00

| PARAMETER | ESTIMATE | T | PROB | 95% BOUND |
|---------------------|----------|------|------|-----------|
| Block | 0.007 | 1.80 | 0.08 | 0.005 |
| Quadratic Arguments | 0.003 | 1.41 | 0.16 | 0.003 |
| Support Arguments | 0.014 | 0.70 | 0.49 | 0.019 |

TABLE A.6. CONTINUED

B. REGRESSION OF FACIAL, ALTRUISM, AND OVERALL STIGMATIZATION ON ATTITUDE AT EACH LEVEL OF (GEL)

1. NO RACIAL CONDITION

| SOURCE | df | SS (1) (2) | F VALUE | MEAN |
|-----------------|----|------------|---------|------|
| Model | 1 | 1.75 | 6.08 | 0.02 |
| Interactions | 5 | 0.85 | 4.87 | 0.01 |
| Overall Total | 7 | 4.75 | 16.64 | 0.01 |
| Error | 48 | 71.80 | | |
| Corrected Total | 49 | 73.55 | | |

Adjusted R² = .48, p < .01

| PARAMETER | ESTIMATE | T | PROB | 95% BOUND |
|---------------|----------|------|------|-----------|
| Model 1 | 0.007 | 0.87 | 0.38 | 0.071 |
| Interactions | 0.005 | 0.80 | 0.42 | 0.001 |
| Overall Total | 0.168 | 3.83 | 0.01 | 0.041 |

TABLE 1-24. CONTINUED

E1. DELAY POSITION

| ANALYSIS | DF | TYPE III SS | F VALUE | PR>F |
|-----------------|----|-------------|---------|------|
| Overall | 1 | 1.09 | 1.38 | 0.18 |
| Interactions | 1 | 1.08 | 1.35 | 0.21 |
| Overall Error | 1 | 1.09 | 1.37 | 0.22 |
| Error | 80 | 26.11 | | |
| Corrected Total | 82 | 46.27 | | |

R-squared = 0.023

R-squared, adjusted = 0.000

| ANALYSIS | ESTIMATE | T | PR>T | 95% CI FOR |
|---------------|----------|------|------|------------|
| Overall | 0.008 | 1.38 | 1.38 | 0.019 |
| Interactions | 0.001 | 0.48 | 1.07 | 0.007 |
| Overall Error | 0.018 | 0.38 | 1.07 | 0.009 |

TABLE A.10 CONTINUED

III. DELAYED-ADJUSTMENT CONDITION

| SOURCE | DF | TYPE III SS | F VALUE | PROB |
|-----------------|-----|-------------|---------|------|
| Model | 1 | 0.15 | 4.13 | 0.05 |
| Intercept | 1 | 0.05 | 0.00 | 0.92 |
| Overall Fval. | 1 | 0.00 | 0.01 | 0.92 |
| Error | 99 | 21.00 | | |
| Corrected Total | 100 | 21.00 | | |

 $R^2 = 0.00$

| VARIABLE | ESTIMATE | T | PROB | DEL. PROB |
|---------------|----------|------|------|-----------|
| Model | 0.000 | 0.00 | 0.00 | 0.000 |
| Intercept | 0.000 | 0.00 | 0.00 | 0.000 |
| Overall Fval. | 0.000 | 0.00 | 0.00 | 0.000 |

variable in the delay condition. Thus, the proposed coding scheme is a better predictor of target attitudes, especially after a delay.

Result 10: A Predictor of Attitudes

In chapters two and three, a number of studies were cited that reported inconsistent findings about the recall-attitude relationship. In fact, such has been written about the recall-attitude relationship and, yet, there has not emerged a definitive answer to the question: does recall predict attitudes? In view of this, the findings of this research regarding the recall-attitude relationship are summarized in this section.

First, consistent with past research, the number of facts recalled was found to be uncorrelated with attitudes. However, the coded qualitative explanation of facts recalled was found to be strongly and significantly correlated with attitudes (Table 33, p.83).

In testing the various hypotheses, the regression model indicated variation in the coded qualitative explanation of facts recalled as one of the predictor variables. An examination of the regression model (see table 34) revealed that recall explains a significant portion of the variation in attitudes after the effects of the other independent variables have been partialled out (Table 35, p.84).

In addition, the summed evaluative implication of recall emerged as a significant predictor of attitude when separate regression models predicting Recall and the evaluative response categories as the predictors were estimated for each of the three delay groups. Recall accounted a significant amount of the residual variance in the immediate ($R^2=.08$, $p<.001$) and delayed attitude ($R^2=.15$, $p<.001$) conditions. Though the simple correlations between the evaluative implication of recall and attitude was significant in the delay condition, the incremental variance explained by the evaluative implication of recall did not reach significance in the delay condition ($R^2=.04$, $p<.05$).

Finally, separate correlations between the number of facts recalled, the summed evaluative implications of facts recalled, and attitude were computed for subjects who reported correct evaluations in their cognitive response protocols and for those who did not. The results showed that the number of facts recalled was not correlated with attitude in either condition (no prior overall evaluation: $r=.07$, $p<.05$; prior overall evaluation: $r=.09$, $p<.05$). These findings are inconsistent with the work of Liberman and Brull (1988) and Sherman et al. (1988), and the current theorizing of Smith and Park (1998).

The correlations between the summed evaluative implications of facts recalled and attitudes, however, showed a different pattern. A strong and significant correlation was obtained between recall and attitude independent of whether overall impressions had been spontaneously generated (reLJL, pRLJL) or not (reLJN, pRLJN).

Taken together, these results suggest that recalled facts are used in forming attitudinal judgments. However, to obtain a good prediction of consumer attitude, the summed evaluative implications of recall should be used and not the number of facts recalled.

The results reported in this chapter and how they fit in with the existing body of research is the topic of discussion in the next two final chapters.

Notes

1. Only the experimental efforts and a couple of key issues are discussed in this chapter. The accompanying tables present comprehensive information about the results of the various analyses performed.
2. The impact of delay on the number of facts recalled was mediated by the effect of novelty, order, and attitude, as the delay \times order interaction (reLJN, pRLJN). The delay \times content interaction (reLJL, pRLJL), and the delay \times attitude interaction (reLJN, pRLJN) were all significant. Follow up analyses revealed that the delay \times order \times attitude interaction was due to a marginally significant order \times attitude interaction in the delay condition (reLJN, pRLJN) but not in the immediate condition (reLJL, pRLJL). The delay \times order interaction was due to a marginal decline in the number of items recalled when the attitude measure preceded the recall measure in the immediate condition.

($p < .05$, $p < .01$) but not in the delay condition ($p < .1$). This is not surprising because the interesting task of filling in the rating scale requires little to zero forgetting which is picked up in the recall measure in the immediate condition. However, the forgetting caused by the interesting task is non-significant when the recall measure is administered after a one week delay because the one week delay is huge compared to the delay resulting from responding to stimulus questions first. Finally, the delay \times content interaction can due to a marginal decline in recall as a function of content in the immediate condition ($p < .05$, $p < .01$) and a marginal increase in recall as a function of content in the delay condition ($p < .05$, $p < .01$). Taken together, the results suggest that the interesting influence of content, either, was minimal to weak, particularly when compared to the huge effect of delay.

3. For all the conventional statistics and regression analysis pertaining to the relationship between factor structure, cognitive responses coded as in and as or as antagonistic interpretations, associations, recall, and attitude, the conventional measure of the independent variable was the summed cognitive implications of the story in that category.

4. All positively valenced cognitive responses directed toward the brand were coded as support arguments. All negatively valenced cognitive responses directed toward the brand were coded as counterarguments. This approach is consistent with the approach utilized by Chelape and Petty (1994). Their category definitions are presented in Appendix C.

5. Over and above the data presented, which supports the proposition that the proposed categories further break up predictors of attitude, further analyses were conducted to lend support to this proposition. Two regression models were developed one containing the design factors, recall, and associations. The other contained the design factors, recall, and counterarguments and support arguments from which overall variations had been isolated. The role played them in the case of the first model, recall and associations accounted for 13% of the variance. However, in the second model recall, counterarguments, and support arguments together accounted for only 8% of the variance. Again supporting the contention that the proposed coding scheme is superior.

CHAPTER XXII DEFINITIONS

Introduction

In the introductory chapters, it was noted that even the most sophisticated response methodology was introduced into marketing by Wright (1974), the approach has been widespread usage. In consonance with the original work of Dawarjee (1961), Wright (1974) and subsequent researchers in the cognitive response tradition (e.g., Balch 1981, Vitell 1982 and Gensberg 1981) have noted cognitive responses toward the brand as reinforcement and support arguments. These categories with brand directed cognitive responses into groups with positive and negative cognitive implications. Though cognitive responses, as noted, have been found to be predictive of attitudes, two very important issues have been largely ignored.

First, all the research conducted by marketing and consumer behavior researchers has assessed both attitudes and cognitive responses immediately after exposure to advertisements. Not even a single study has measured whether

negative responses are good predictors of attitude over time have appeared in this is a key issue because consumers do not typically view an ad and then immediately make a purchase. Rather, days, if not weeks, pass before the purchase is made. Therefore, it is extremely important to know whether the reaction obtained with immediate measurement generalizes over time.

Second, the coding of all negative responses toward the brand as negative or brand-threatening implicitly assumed that all responses are equally valued under all situations in making evaluation judgments. Though this may be true, there is reason to believe that there are qualitatively different types of negative responses which may be differentially important in making evaluation judgments under different conditions. For example, Beatty and Day (1998) suggest that affective responses be an overstatement, say be the key predictors of brand attitudes formed during exposure to ads containing emotional appeals. To test their hypothesis, they experimentally coded affective responses and examined their role in brand attitude formation. MacInnis, Loken and Bell (1991) have suggested that under certain circumstances, retrieved prior evaluations may be used in making a decision. Bettman, Wyer, Bell and Gordon (1994) have suggested that the negative response methodology may prove useful in

examining the relationship between qualitatively different types of responses and attitude change. In view of this, the present research sought to examine what these qualitatively different responses are, and how they affect attitude judgment under different conditions. Two insights were expected from the investigation: (a) a clearer understanding of the processes underlying consumer attitude formation and change, and (b) identification of the key antecedents of brand attitudes might permit better prediction of consumer attitudes.

In addition, this research sought to address a controversy that has persisted for over two decades: does recall predict attitude? This is an important issue because recall measures are used routinely by practitioners to measure ad effectiveness (see Thorson 1981). Yet, academic research is split on the efficacy of such recall as a predictor of attitudes (see Olson 1973; Baskies 1981).

Finally, the effects of prior knowledge and contextual information on the cognition-attitude relationship were examined. These two variables were chosen because prior research suggests that they are important mediators of the persuasion process (e.g., Petty and Cacioppo 1981), but not much is known about their role in the persuasion process.

Secondly, there were four questions underlying the research presented in the preceding chapters. First, what are the qualitatively different types of responses produced upon exposure to advertisements? Second, how do these different types of responses decay over time? Third, what is the role of these qualitatively different types of responses in making situational judgments immediately after exposure and later on in time? Fourth, how do prior knowledge and contextual information underlie the relationship between the various types of responses and brand attitudes?

In this chapter, the implications of the response presented in Chapter Eight are discussed in the light of the objectives outlined above. The discussion is presented in two sections. In the first, the temporal characteristics of the different types of responses and the effects of prior knowledge are discussed. In the second, the attitude-response relationship and the moderating role of being, prior knowledge, and contextual information are considered.

The Effect of Being and Knowledge on Recall and Cognitive Responses

Historically, the antecedents of attitudes have been partitioned as recall of message arguments and idiosyncratic cognitive responses to the message. One of the objectives of this research was to examine the nature of the qualitatively

different types of responses generated upon exposure to ads and how they decay over time. Thus, the first step was to partition responses into categories that were differentially sensitive to delay, and important as predictors of attitude.

Based on the literature from advertising, consumer behavior, and psychology, four types of responses were identified that were differentially sensitive to delay and potentially important as predictors of attitude. They were eloquent interpretations, abstractions, overall evaluations, and inferences. In addition, each result was isolated as one of the important antecedents of attitude.

The next step was to examine the effects of delay and prior knowledge on the elicitation of each type of response. There were three papers to this. First, and most obviously, this provided an evaluation of the hypotheses presented in Chapter Five. Second, it showed whether such types of thoughts are produced upon exposure to advertisements. As noted, the typology of thoughts was based on empirical findings from a variety of literatures other than advertising. Thus, it remained to be seen whether such responses were produced upon exposure to advertisements. Third, it served as a validity check on the operationalization of the conceptual categories. That is, if the data supported the hypotheses set forth in Chapter Five,

that it would show that the categories, as operations, and, subordinated to the conceptual categories.

Delay Effects

The sets of analyses were conducted. The standard two task responses produced at opening behavior over time. The other analyzed the effect of encoding, storage, and retrieval on responses produced upon exposure to an environment. The first provided insight into the temporal characteristics of individual responses. The second demonstrated which operations were available to a consumer at the time of decision making.

As seen by these comparisons and with behavior each subject's initial and delayed responses. Thus, each initial response was treated to see if it was forgotten. The pattern of data supported hypothesis 1: recall decayed the fastest, followed by diagnostic interpretations, abstractions, and overall evaluation, respectively.

The second analysis compared the processes of the no delay group with the delay group. Fast recall was found to decline significantly. Diagnostic interpretations declined, but not significantly. Abstractions increased significantly, overall evaluations increased, but not significantly, inferences increased significantly. The latter finding supports hypothesis 2. These results directly resemble the

results of a number of earlier studies (e.g., Allen and Oler 1985; Christensen 1986; Frederickson 1979; Kassar and van Rijn 1991).

The implications of these results are clear. First, consumers appear to behave as if they understand of a product upon exposure to an advertisement. The abstract understanding, interpretations of facts, and the context facts needed are stored in memory and become a part of the consumer's knowledge about the product (see also Frederickson 1979).

Even when the consumer's memory undergoes substantial transformation, details facts and memory traces were retained. In fact, such distortions are produced with delay. The changing composition of memory may have a profound influence on consumer decision making. Consumers faced with decisions soon after learning about a product may have the ability to retrieve facts and use them to make a decision. With delay, however, consumers may be driven towards increased reliance on the abstract impressions that persist.

Though the present research derived its inferences from an using a single experimental session, the pattern of results is relevant to more typical situations in which the consumer learns about brands from multiple exposures to

circumstances and other information sources (e.g., postage label) across a number of options.

Evidence supporting the generalizability of these findings to the multiple-episode alternative comes from two sources. First, in the analysis of John Nash's testimony at the Watergate hearings, Bolander (1981) shows that divergences may be derived from information obtained from several different episodes. Second, one of the findings of the present research also supports this position. It was noted that new and new observations are produced over time. One explanation for this is that during the intervening delay, subjects retrieved the stored responses and acted over them, thus producing new observations. The process of retrieving and revisiting stored information may be considered as analogous to spreading information across multiple episodes.

Finally, the results have implications for the way in which information is stored and retrieved. The data support the dual coding approach proposed by Garbin (1981). That is, both the original facts and divergences were stored independently. Evaluative judgment at a point in time is a function of the application of the codes retrieved from both these stores which are independently accessed. A summation of the implications for consumer memory are deferred to the

each section, as most of the evidence presented in that section are pertinent to the discussion.

Prior Knowledge

A number of researchers have, in the past, found that increased knowledge leads to an increased ability to recall facts (e.g., Kline 1973; Super 1961). Consistent with past research, the data showed that experts were able to recall significantly more facts than novices. Also, single-word interpretations were produced more frequently by experts. For fact recall, the effect of expertise was obtained irrespective of the measure used. However, for single-word interpretations the effect of expertise was significant only when it was operationalized as objective knowledge but not when it was operationalized as familiarity.

In Chapter Three, it was noted that abstractions and overall evaluations are often generated effectively or unintentionally (Holston and Klatzky 1981) during the processing of information. This implied that the level of expertise should not affect the number of abstractions and overall evaluations. The data showed that the number of abstractions and overall evaluations are unaffected by the level of expertise.

Finally, intrusions were found to decrease with increasing knowledge. It is possible that experts made more

score is small because of their superior ability to access the relevant information. For Johnson too, the knowledge effect reached significance only when objective knowledge served as the operational measure of prior knowledge.

Taken together, the results are consistent with expectations (see hypothesis 5). The differences in effects obtained as a function of the operational measure of knowledge used are not surprising. Measures of familiarity are not pure measures of expertise. They include the respondent's belief in his/her own expertise. Often, less knowledgeable people are overconfident about their expertise, thus accounting for the failure to obtain the expected results. The measure of objective knowledge is not influenced by the respondent's beliefs and, therefore, provides a truer measure of prior knowledge. Thus, the predicted results were obtained using the latter measure but not the former two items (see for a similar explanation).

These results suggest that even novices, when exposed to an advertisement, form distinct representations of the advertised brand. Thus, novices have available to them brand related cognitions on which to base distinction, judgement, and so on. Consequently there is only an peripheral, weak (Fazio and Olson 1985) or low affect based on weak familiarity (Olson 1988) to make an evaluation judgment.

In sum, the framework for coding responses appears to be useful. Interpretations, elaborations, and overall evaluations are generated in the course of viewing advertisements. The different types of responses show different decay rates and, most importantly, they are affected by delay and prior knowledge in predictable ways. The latter point is especially important as it shows that the categorization of cognitive responses, as operationalized, corresponded to the conceptual categories. This provides greater confidence in the results obtained vis-a-vis the relationship between these categories and attitudes. In the next section, the role of these different types of responses and recall in attitudinal judgment is explored.

Recall, Cognitive Responses, and the Prediction of Attitudes

In this section, the relationship between the different types of cognition and attitudes is explored. First, the form of the proper operational measure of recall and cognitive responses is addressed. Second, the moderating effects of delay, prior knowledge, and contextual information are considered.

Operational Measures of Recall and Cognitive Responses

The most frequently used measure of recall and cognitive responses has been the number of items recalled. Using this measure, cognitive responses have been found to correlate

significantly with measures of attitudes—a result replicated in this study. However, the number of items recalled has typically failed to correlate with attitudes; this result was also replicated in this research. These findings have led a number of researchers to conclude that cognitive responses are good predictors of attitude but recall is not (e.g., Greenwald 1988).

Though this conclusion appears reasonable, a closer look at the research on which it is based reveals that the failure of past research to obtain a relationship between recall and attitudes may be due to the nature of recall used. Let's take the number of facts recalled. Consider for a moment three individuals who have viewed the same ad and recall three facts each. One recalls three positive facts, another recalls three negative facts, and still another recalls some mixture of positive and negative facts. It is obvious that the three individuals will not have the same brand attitude. Yet, using the number of items recalled to predict brand attitude assumes that the number of facts recalled predicts attitudes, irrespective of the evaluative implications of the facts recalled. Thus, it is not surprising that past research has repeatedly found that recall to be a poor predictor of attitudes.

At this point, one may well ask why the sheer number of counterarguments and support arguments has been found to predict attitudes when recall does not? The number of counterarguments and support arguments have been found to predict attitudes for the same reason that recall has failed to predict attitudes. The coding of the raw negative responses as counterarguments and support arguments implicitly takes into consideration the evaluative implications of the responses and, therefore, negative responses are found to predict attitudes. Thus, it was expected that when recall was operationalized in the evaluative implications of the items recalled, a strong correlation between recall and attitude would be obtained. Also, it was felt that the evaluative implications of the negative responses should be used because (1) provide a more precise measure of evaluative implications than the simple +/- measure implicit in the CA and SA codes, and (2) to keep with the need for further refining the proposed mappings (i.e., ambiguous interpretations, distortions, and so on) on the basis of content.

In addition, a number of other issues pertaining to operationalization were considered. First, using the number of items recalled or repeated elicited answers as additive coded. However, research has shown that the averaging model

may often be more appropriate (e.g., Bettino, Capon and Lata 1981).

Second, the satisficing theory (Sawyer, Lonsdale and Marshall 1984; Bettino 1986; Rye 1979) suggests that consumers involve attitude learning and message acceptance. Small message learning but not acceptance. Thus, including a measure of acceptance may improve the predictive power of recall significance. The point being made is analogous to the distinction between knowing that π is 3.14 and that brand π possesses attributes π and believing that brand π possesses attributes π . This distinction has also been made earlier by Plummer (1981).

Third, weighting researchers (Jago and Teichert 1974; Smith and Teichert 1977) have suggested that weighting the evaluative implications of brand attributes with the importance of that attribute in the decision process may improve predictive power. In the present context, this suggests that the evaluative implications of recall and cognitive responses, weighted by its importance, may prove to be a better (weighted) measure than the unweighted measure.

Thus, seven operational measures of both recall and four operational measures of cognitive responses were considered. For recall, the measures were: number of facts recalled, correct evaluative implications of facts recalled, average

evaluative implication of facts recalled, summed evaluative implications of facts recalled weighted by belief strength, average evaluative implication of facts recalled weighted by belief strength, summed evaluative implications of the facts recalled weighted by importance weight, and the average evaluative implication of the facts recalled weighted by the importance weight. For each category of cognitive responses the four measures were summed evaluative implication of the responses, average evaluative implication of the responses, summed evaluative implication of responses weighted by importance weight, average evaluative implication of the responses weighted by importance weight. Also, for G1 and G2 the number of responses in the category was calculated.

The operational measures were tested by computing correlations between each measure and attitude. The results showed that the summed evaluative implication of facts recalled and responses generated was an appropriate measure. Alternative operational measures involving the number of responses, the average evaluative implication, or various weighted measures did not perform better than the summed evaluative implication and, therefore, the latter was chosen on grounds of parsimony. It is equally noteworthy that the number of facts recalled did not correlate with attitude-

In view of the strong and significant correlation between the summed evaluative designation of recall and attitude, and the lack of a correlation between the number of ideas recalled and attitude, further analyses were conducted to explore whether the results are attributable to the poorer operationalization of recall or due to some other factor.

Recent empirical work (e.g., Lokenaghton and Hall 1981; Shanteau et al. 1981) and theorizing (Harris and Park 1978) has suggested that whether recall predicts attitude or not depends on the availability of prior overall evaluations. Specifically, Harris and Park (1978) propose that the key factor that determines whether recall is predictive of attitude or not is the processing mode that one enters at the time of searching. In automatic, when information is processed in an evaluative mode during searching (referred to as holistic judgment), facts retrieved at the time of later judgments are not used because the stored overall evaluation is retrieved and directly used to make the judgment. However, when information is searched (referred to as memory-based judgment), facts retrieved at the time of later judgments are used as the basis for the judgment, as no prior evaluations are available.

To examine this distinction, separate correlations between the number of facts recalled, the summed evaluative

definition of the terms recalled, and attitudes were computed for those subjects who had spontaneously reported overall evaluations in their negative response previously (analogous to the inclusion judgment condition) and those who had not (analogous to the memory-based judgment condition).

The results showed that the correlation between the number of terms recalled and attitudes did not reach significance in either condition. However, the correlation was larger and marginally significant for the group which had not reported prior overall evaluations in the negative response previous.

The correlation between the summed evaluative application of recall and attitudes was large, significant, and comparable in size across the two groups.

Together, these results are in conflict with the theorizing of Neatle and Park (1980). It appears that when recall is operationalized in terms of the evaluative application—a conceptually meaningful operationalization—it emerges as a good predictor of attitudes independent of the processing mode active at the time of encoding.

Thus, the failure of past research to obtain a correlation between recall and attitudes is because of the way recall had been operationalized in those studies. When recall is operationalized as the evaluative application of

the data revealed, a strong and significant correlation is obtained between recall and reliability. In fact, the slope of the correlation was comparable to the size of the correlations between categories of cognitive responses and reliability.

Using the evaluative implication of cognitive responses rather than simply partitioning them as positively and negatively valenced also affords improved predictability. However, this improvement is not large.

Finally, there is the question of why weighted measures did not perform better than the unweighted measures. Most likely, weighting the evaluative implication of recall with belief measures failed to improve predictive power because the respondents believed all of the claims. This is probably true because of the experimental setting in which the research was conducted. However, under normal viewing conditions, people are more skeptical about all claims, and therefore weighting the recall score with belief strength may enhance predictive power of measures of recall. It would be for future research to investigate this issue.

Weighting the evaluative implications of recall and cognitive responses with importance weights may not have helped because subjects' priorities may have remained fairly invariant facts/responses. Such facts/responses are

especially salient and, therefore, most likely to be retrieved. This suggests that even though weighting by informants may enhance predictive power when predicted attitudes are used, it may not have the same effect when each individual's idiosyncratic recall and cognitive responses are used.

These results have a strong implication from a pragmatic standpoint. When the prediction of consumer attitudes toward the advertised brand is the objective, the evaluative implication of source recall and/or cognitive responses should be used as the operational measure of the predictor variable. In this research, the evaluative implication of each item recalled and each cognitive response was obtained from the respondents after all other measures had been administered. Obtaining such ratings from subjects may be difficult, time consuming, and prohibitively expensive in many situations. In such situations, the researcher may not have judged to rate each response for its evaluative implication. Past research has shown that there is a very high degree of correspondence between the ratings given by subjects and by independent judges (e.g., Petty, Wells and Brock 1978).

The Familiar-Intelligence Link

This research sought to present a comprehensive examination of the relationship between recall, cognitive responses, and attitudes. Three key issues were addressed: First, do the qualitatively different types of cognitive responses predict attitudes and, if so, how do they compare to IS and DS. Second, how do delay, prior knowledge, and contextual information affect the relationship between recall, cognitive responses, and attitudes. Third, how do both recall and cognitive responses compare as predictors of attitudes.

Are there any ongoing policy questions?

Taken together, the results were very encouraging. A regression model with attitudes as the criterion variable and the summed evaluative implications of recall, distractions, and overall evaluations as the predictor variables, explained over 70% of the variance in the attitudinal data. Diagnostic interpretations and intrusions did not account for a significant portion of the variance. The failure of distractions to account for variance in the attitudinal data could be due to two reasons. First, there were very few intrusion errors. Second, respondents may have been less certain about the accuracy of the intrusion errors and relied relatively less on them. The results support the first

explanations. Weight strength ratings given to interview errors were not less than that given to moderate weight. A similar result has been reported by Spear, Trull and Garbus (1984).

The lack of a relationship between single-out interpretations and attitude was unexpected. When single-out interpretations were correlated with attitude, a significant correlation was obtained. Note, however, that this correlation was small compared to the correlations between overall, hypothetical, overall evaluations, and attitude. One explanation for this could be within-observerity. The evaluative implications of single-out interpretations were correlated with the evaluative implications of both overall and hypotheticals, and the size of these correlations was larger than the correlation between single-out interpretations and attitude.

Though observations and overall evaluations appeared to predict attitude, it was necessary to determine if, even a prediction was made, it was better to make negative responses to C1 and M. Two additional regression models were estimated. The first attitude as the criterion and the summed evaluative implications of overall, C1, and M as the predictors. The other used attitude as the criterion and the summed evaluative implications of overall, C1, M,

abstractions, and overall evaluations on the predictors. A series of comparisons revealed that, in each case, abstractions and overall evaluations explained more variance in the validated data. Of particular importance were two findings. First, abstractions and overall evaluations explained a significant amount of the residual variance in the validated data after the variance associated with C1 and C2 had been partialled out. However, the opposite was not true. In fact, when supplementary analyses were run including overall evaluations, i.e., a model was validated that contained the design factors, and the summed evaluative implications of FORMAL, C1, C2, and abstractions, the results did not change. Abstractions explained a significant amount of incremental variance but C1 and C2 did not. Second, abstractions and overall evaluations accounted for more of the variance in delayed attitudes than C1 and C2.

The influence of prior knowledge and context

The results about task focus, abstractions, and overall evaluations retrieved at the time of decision making are used in making an individual judgment.

There were two key findings with regard to the effect of the independent variables on the relationship between the cognitive categories and attitudes. First, independent of the level of delay, subjects based their judgments on facts,

abstractions, and overall evaluations obtained at that time. Delay had no impact on the relative importance of the different types of cognitions in making attitudinal judgments. However, it must be noted that abstractions assessed at the time of exposure were found to be poor predictors of attitudes measured after a delay. Fact recall and overall evaluations assessed at encoding were found to be significantly predictors of delayed attitudes.

Second, information about competing brands affects the reliance on different types of cognitions. Abstract representations are relatively more important in the absence of such information. Detailed facts are relatively more important when contextual information is present. The latter is true for experts but not novices.

Also, there is some evidence, though weak, that experts and novices may be rely on different types of cognitions when making attitudinal judgments. Experts rely more on overall evaluations than do novices. This difference, however, disappears with delay.

SMALL OR SPLITLY PRESENTED WHICH IS BETTER?

As noted earlier, prior research has often failed to obtain a significant relationship between recall and attitude, and cognitive responses have been proposed as an alternative (Kossanick 1981). In an earlier section, it was

show that the prices stemmed from the operational nature of reality itself. The question that remains is: How does the evaluative implication of revealed facts compare with cognitive responses?

An examination of the regression model containing recall, abstractions, and overall evaluations suggests that each type of cognitive response for a significant amount of unique variance in the attitude scores. This contrary to the position advanced by Grossman (1967) and others, the present research suggests that both recall and cognitive responses are important antecedents of attitudes, and both need to be considered to be able to understand the persuasion process fully.

Taken together, the results have a number of important implications. First, recall, abstractions, and overall evaluations emerge as the top predictors of attitudes. Though cognitive responses model 46 and 44 percent for a significant portion of the variance in attitudinal data, abstractions and overall evaluations account for significant incremental variance. This is probably because 46 and 44 are gross categories that include not only those types of responses that are utilized in making attitudinal judgments but, also, responses that are not. Thus, separating out qualitatively different types of responses would in theory

these types of responses that are important antecedents of emotional judgments.

The results have implications for consumer decision making. First, prior knowledge appears to have independent effects on affect and judgment. Though experts had a superior recall of facts, their attitudes were more strongly related to overall evaluations than were novices.

The results also speak to the differences between memory-based judgments and choice. It appears that the formation of emotional judgments does not require source discriminations, though as abstract impressions and overall evaluations strongly influence attitudes judgments even when detailed facts are readily available. For example, in the no delay condition, when facts were readily available, respondents continued to rely on general impressions in forming attitude judgments. Similarly, experts who had both the ability to recall facts and use them in making a judgment, chose to rely on extracted overall evaluations in making emotional judgments.

When the evaluation task provided a choice, i.e., when information about a competing brand was made available, the reliance on abstractness and overall evaluations declined and the reliance on recalled facts increased.

As noted in the previous section, the studies have implications for memory theory. In the recent literature on person perception, two alternative hypotheses have been advanced about the nature of memory representations underlying judgments about people. Hastorf (1984) suggested that encoded facts and abstract impressions and interpretations are both stored, but as independent representations in memory. At the time of making an evaluational judgment, each representation is recalled independently and all the traces retrieved are used in making the judgment. This has come to be known as the dual coding hypothesis.

Erce, Smith and Hastorf (1984), on the other hand, suggested that factual details and impressions and interpretations are stored as a single integrated representation in memory. At the time of making a judgment, this representation is retrieved in an all-or-none fashion, and the implications used in making a judgment. This is the integrated representation hypothesis.

The present research tends support to Hastorf's thesis. First, though Hastorf did not find a strong correlation between facts recalled and judgments, the dual coding hypothesis predicts a correlation. According to this hypothesis, judgments at a point in time are a function of

the evaluative implication of retrieved neutral facts and abstract implications. In contrast, Kopp, Inaki and Gordon's (1994) integrated representation hypothesis does not depend on such a correlation as the judgment is based on the evaluative implication of the retrieved integrated representation which is formed at the time of encoding and, therefore, the evaluative implication of the neutral facts recalled, especially after a delay, may not be correlated with judgment. In the present research, a strong and significant correlation was obtained between recalled facts and evaluational judgment.

Second, according to the integrated representation hypothesis, peripheral or non-central details are expected to be forgotten rapidly. Consequently, this implies that source traces evaluatively inconsistent with the gist (abstractions and overall evaluations) should be forgotten faster, while the evaluatively consistent traces survive. If so, the correlation between the evaluative implication of recalled abstractions and recalled facts should increase over time. The data did not show such an increase.

The results also have implications for assessment of an effectiveness. First, the evaluative implication of recall and negative responses should be used as the predictor variable, and not the number of each type of response.

Second, instead of using cognitive responses as SI and AI, it seems that using only directness and overall evaluations will permit better prediction of attitudes.

Third, recall and cognitive responses should both be measured and used in predicting attitudes. Using one or the other measure is not sufficient as recall and cognitive responses each account for a unique part of the variance in the attitudinal data.

From a pragmatic standpoint, however, one may at times be forced to use one or the other measure due to such factors as logistic considerations. In such circumstances, the specific measure used should be selected on the basis of the objectives of the ad campaign. Based on the results, one may speculate that consumers rely more on direct impressions when forming judgments, but that they rely on detailed facts when making a choice. Thus, if the objective of the campaign is to build favorable consumer attitudes toward the brand, measures of direct impressions are likely to be better indicators of the effectiveness of the campaign than memory for specific details. Hence, measures of cognitive responses would be more appropriate. If precipitating a sale decision is the objective of a campaign, memory for facts is likely to be a better indicator of the effectiveness of the campaign.

Finally, a word on the multiple measures of cognitive resources used. Probably, the use of multiple measures helped lay to rest questions that may otherwise have gone unanswered. From a practical standpoint, however, these added measures may lead to significantly higher costs. It is hoped the steps of this research be repeated on the most-benefit benefit.

APPENDIX B PERIODS COVERED BY INTERVIEW RESPONSES

| INTERVIEWEE | INTERVIEW DATE | INTERVIEW TIME | INTERVIEW DURATION | INTERVIEW LOCATION | INTERVIEW METHOD | INTERVIEW TYPE | INTERVIEW DATE | INTERVIEW TIME | INTERVIEW DURATION | INTERVIEW LOCATION | INTERVIEW METHOD | INTERVIEW TYPE |
|--------------------|----------------|----------------|--------------------|--------------------|------------------|----------------|----------------|----------------|--------------------|--------------------|------------------|----------------|
| Brian (1981, 1982) | | | | | | | | | | | | |
| Brian (1983) | | | | | | | | | | | | |
| Brian (1984) | | | | | | | | | | | | |
| Brian (1985) | | | | | | | | | | | | |
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| Brian (1988) | | | | | | | | | | | | |
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| Brian (2002) | | | | | | | | | | | | |
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| Brian (2005) | | | | | | | | | | | | |
| Brian (2006) | | | | | | | | | | | | |
| Brian (2007) | | | | | | | | | | | | |
| Brian (2008) | | | | | | | | | | | | |
| Brian (2009) | | | | | | | | | | | | |
| Brian (2010) | | | | | | | | | | | | |
| Brian (2011) | | | | | | | | | | | | |
| Brian (2012) | | | | | | | | | | | | |
| Brian (2013) | | | | | | | | | | | | |
| Brian (2014) | | | | | | | | | | | | |
| Brian (2015) | | | | | | | | | | | | |
| Brian (2016) | | | | | | | | | | | | |
| Brian (2017) | | | | | | | | | | | | |
| Brian (2018) | | | | | | | | | | | | |
| Brian (2019) | | | | | | | | | | | | |
| Brian (2020) | | | | | | | | | | | | |
| Brian (2021) | | | | | | | | | | | | |
| Brian (2022) | | | | | | | | | | | | |
| Brian (2023) | | | | | | | | | | | | |
| Brian (2024) | | | | | | | | | | | | |
| Brian (2025) | | | | | | | | | | | | |
| Brian (2026) | | | | | | | | | | | | |
| Brian (2027) | | | | | | | | | | | | |
| Brian (2028) | | | | | | | | | | | | |
| Brian (2029) | | | | | | | | | | | | |
| Brian (2030) | | | | | | | | | | | | |
| Brian (2031) | | | | | | | | | | | | |
| Brian (2032) | | | | | | | | | | | | |
| Brian (2033) | | | | | | | | | | | | |
| Brian (2034) | | | | | | | | | | | | |
| Brian (2035) | | | | | | | | | | | | |
| Brian (2036) | | | | | | | | | | | | |
| Brian (2037) | | | | | | | | | | | | |
| Brian (2038) | | | | | | | | | | | | |
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| Brian (2040) | | | | | | | | | | | | |
| Brian (2041) | | | | | | | | | | | | |
| Brian (2042) | | | | | | | | | | | | |
| Brian (2043) | | | | | | | | | | | | |
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| Brian (2091) | | | | | | | | | | | | |
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| Brian (2096) | | | | | | | | | | | | |
| Brian (2097) | | | | | | | | | | | | |
| Brian (2098) | | | | | | | | | | | | |
| Brian (2099) | | | | | | | | | | | | |
| Brian (2100) | | | | | | | | | | | | |

APPENDIX B
PROPOSED CODING SCHEME FOR COGNITIVE RESPONSES

GLOBAL APPRAISALS

1. Statements mentioning the source derived from a single attribute presented in the advertisement (e.g., the statement "comfortable from 2 to 50 in 7 seconds" and be interpreted as "good ventilation").
2. Statements containing appraisals of a single attribute (e.g., the feature about heated shoes may be interpreted as "good shoes" or "long lasting shoes").

GLOBAL INFORMATION

1. Statements about the benefits derived from the product (e.g., "comfortable use").
2. Categorization statements. These are statements indicating the product type (e.g., "the car is a family car" or "the car is meant for other people").
3. Statements of consequences of using the product (e.g., "will be fun to drive the car").
4. Statements indicating similarity to other products along a particular dimension (e.g., "styled like a sports").
5. Exclusive statements of overall evaluation.

GLOBAL EVALUATION

1. Statements of overall evaluation of a product (e.g., "worth considering").
2. Exclusive affective reactions to the product (e.g., "good car").
3. Exclusive statements about subsets of features, i.e., characteristics.

FEATURES

1. Statements about the presence of features not mentioned in the advertisement.

FEATURE APPRAISAL

1. Statements showing number of features (e.g., "this many features").

RECALL

1. Statements mentioning specific information presented later in the advertisement.
2. Inclusion/exclusion criteria of recall that have been included to other categories because of further processing of the information.

GLOBAL EVALUATIVE THOUGHTS

1. Statements about the availability of the brand (e.g., "never heard of this brand before").
2. Statements mentioning the lack of specific features or representing doubts about the relevance of features (e.g., "not

even if it had a power steering or didn't have power brakes".
 3. Statements about the features in general without reference to any feature in particular, and excluding overall evaluations (e.g., "has good features").

QUALITY FEATURES

1. Statements expressing a desire for more information (e.g., "I like to know the details of the warranty").
 2. Questions about what the features mean (e.g., "I wonder what electronic fuel injection means").

RELATIVE FEATURES

1. Statements questioning the validity of the claim (e.g., "It's not sure if that statement is accurate").
 2. Statements about the believability of the claim (e.g., "I don't believe that").
 3. Statements about the benefit of the feature (e.g., "This brand's engine has a better fuel economy than the others").
 4. Statements about the benefit of the feature (e.g., "This'll be anything to make a better").

AN ASSOCIATE FEATURES

1. Statements about the quality of the association (e.g., "The ad is not satisfyingly worded").
 2. Statements about the content of the advertisement.
 3. Narrative statements about an association (e.g., "Should include information on price").

TRAILER FEATURES

Statements that do not reflect any type of relevant evaluation of the advertised message or the advertisement itself (e.g., "I wish this were true" or "I'm getting bored").

Each of the above categories is further subdivided by valence. That is, each statement is a category is classified according to the valence expressed by it. For example, there will be a category of positively valenced single and overall evaluations (e.g., good gas mileage) and a corresponding category of negatively valenced single and overall evaluations (e.g., poor gas mileage).

Thus, positively valenced statements that are coded as single and overall evaluations, abstracts, overall evaluations, frequency statements, conclusions, and other evaluative thoughts are coded as support arguments. Negatively valenced thoughts coded as single and overall evaluations, abstracts, overall evaluations, frequency statements, conclusions, and other evaluative thoughts are coded as counterarguments. This is consistent with the scheme developed by Giner and Petty (1976). Their coding scheme is presented in appendix 5.

APPENDIX B
TRADITIONAL SCORING SCHEMES FOR COGNITIVE RESPONSES

1. CRITICAL JUDGMENT FOR COGNITIVE RESPONSES (MILNER 1974)

CONTRADICTIONS

Statements which are directed against the idea of or use of the product in the advertising communication and which :

- (a) state a specific undesirable consequence of using the product
- (b) state a specific undesirable attribute of the product
- (c) suggest an alternative method for handling one of the problems equal to the advertising message
- (d) state a specific favorable or desirable consequence or attribute of an alternative product
- (e) challenge the accuracy or validity of a specific argument contained in the message.

These statements may take the form of declarative sentences or interrogative questions. If the statement is in the form of a declarative question, the latter should be argumentative or express doubt or disbelief.

The following types of statements are not to be considered as CONTRADICTIONS:-

- (a) simple statements of dislike for the product idea
- (b) general criticisms which are not accompanied by any of the types of the types of statements discussed above
- (c) statements failing to fit any of the other categories (purely derogatory, supporting arguments--expressions of certainty).

GENERAL REACTION

- (a) Statements expressing distrust or derision of advertisements or the advertiser.
- (b) Statements expressing dislike for the overall scene used by the advertiser in this presentation.

DEFINITIONS

Statements which are directed in favor of the sale or use of the product in the advertising message and which:

- (a) state a specific favorable consequence of using the product or a favorable reason for using the product
- (b) state a specific desirable attribute of the product
- (c) suggest an undesirable consequence of not using synthetic resin products
- (d) reaffirm the accuracy or validity of an argument presented in the advertisement.

The following types of statements are not to be considered as DEFINITIVE STATEMENTS:

- (a) simple statements of liking for the product
- (b) positive emotional reactions accompanied by any of the types of statements.

DEFINITIVE

Statements expressing interest in additional information about the product. These typically statements are distinguishable from rhetorical queries DEFINITIVE by your judgment of the subject's intent. If the intent was to ascertain validity, express disbelieve, or prove and a counterargument, the statement is a DEFINITIVE. If the intent is to merely induce about more information, it is a DEFINITIVE statement.

DEFINITIVE words (etc)

II. SCHEMA MODEL FOR COGNITIVE RESPONSE (SACCHINI AND PETTE 1979)

CONTRASTING

- (a) Statements direct/indirect head/neutral head/indirect head/neutral specific favorable consequences of using it,
- (b) positive statements about alternative brands,
- (c) challenges to the validity of the claim, and
- (d) statements of effect against the advocated brand.

SUPPORT ADVOCATE

- (a) statements in favor of the advocated brand that mentioned specific favorable consequences of using it,
- (b) statements rejecting alternative brands,
- (c) statements in support of the validity of the claim, and
- (d) statements of effect in favor of the advocated brand.

NEUTRAL/NEUTRALIZING COMMENTS

- All other types of statements.

ADAPTED FROM SACCHINI AND PETTE (1979)

Please respond to questions 1 & 2 by circling a number between -2 and +2 to reflect the extent of your agreement/disagreement with each statement. -2 indicates strong disagreement, 0 indicates a strong agreement.

1. I think it is a good product.

STRONGLY +2 +1 0 -1 -2 STRONGLY
AGREE DISAGREE

2. I liked the brand.

STRONGLY +2 +1 0 -1 -2 STRONGLY
AGREE DISAGREE

3. By circling a number between -2 and +2 please indicate how likely you are to purchase the brand.

VERY -2 -1 0 +1 +2 VERY
UNLIKELY LIKELY

4. By circling a number between -2 and +2 please indicate how interested you are in purchasing the brand.

VERY -2 -1 0 +1 +2 VERY
DISINTERESTED INTERESTED

Please explain why you gave the board the ratings you did to respond to questions 1, 2, 3, and 5 on the last page.

It seems apparent that the following would be:

1. Have you ever owned a cell phone yourself?

Abstract

3. Using the writing skills below please indicate how knowledgeable you consider yourself about each worded statement.

| TIME | NOT AT ALL | | | | | | |
|----------|------------|---|---|---|---|---|---|
| PROBABLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

For questions 3-5 please respond by filling in the blanks with the appropriate term.

3. A baseball player's ability to produce sound frequencies equally and uniformly is measured by his _____.
4. The term used to indicate the fluctuation in tape speed that causes the sound to waver in pitch is _____.
5. The hissing sound that is heard when the music turns quiet is called _____.

For questions 8-9 please indicate whether the statements are True or False by circling the appropriate response.

8. Compared to other boards on the market, a wellknown stereo weighing 10 ounces should be considered light.
TRUE / FALSE

9. On the average wellknown stereo play for 10-11 hours on a set of batteries.
TRUE / FALSE

10. Most wellknown stereos have a frequency response of 40 - 15,000 Hz.
TRUE / FALSE

For questions 9-11 please respond by circling the correct response.

9. Delay circuitry is used because it

- (a) Decreases the frequency response
- (b) Reduces hiss and flutter
- (c) Reduces noise
- (d) Leads to a uniform tape speed

10. A fast reverse feature allows you to

- (a) On most players to fast forward without having to press the stop control
- (b) Search for a particular recording
- (c) All of the above

11. An auto-reverse feature allows you to

- (a) Restart the tape automatically
- (b) Play both sides without having to take the tape out
- (c) None of the above

APPENDIX B
CONDITIONALIZING TASK IN PHASE 3

For each of the products listed below, please indicate on a scale from 1 to 5 how familiar you are with the product class compared to your peers. 1 indicates complete unfamiliarity, 5 indicates a very high degree of familiarity, and 3 indicates that you consider your level of familiarity as being comparable to your peers. Please respond by placing a number between 1 & 5 that reflects your degree of familiarity with the product class in the space provided next to each product class label:

| YOUR | | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 | YOUR |
|--------------------|-------|---|---|---|---|---|--|---|---|---|---|---|----------|
| FAMILIAR | | | | | | | | | | | | | FAMILIAR |
| CAR | _____ | | | | | | | | | | | | |
| PERSONAL | _____ | | | | | | | | | | | | |
| COMPUTER | _____ | | | | | | | | | | | | |
| VIDEO | _____ | | | | | | | | | | | | |
| RECORDING | _____ | | | | | | | | | | | | |
| CAMERA/PHOTOGRAPHY | _____ | | | | | | | | | | | | |
| RECORDING | _____ | | | | | | | | | | | | |
| WEAPON | _____ | | | | | | | | | | | | |
| CAMERA/PHOTOGRAPHY | _____ | | | | | | | | | | | | |
| RECORDING | _____ | | | | | | | | | | | | |
| GLASS | _____ | | | | | | | | | | | | |
| CAMERA | _____ | | | | | | | | | | | | |
| WEAPON | _____ | | | | | | | | | | | | |
| GLASS | _____ | | | | | | | | | | | | |
| COMPUTER | _____ | | | | | | | | | | | | |
| SOFTWARE | _____ | | | | | | | | | | | | |

APPENDIX F
QUESTIONNAIRE USED ON February 4

Using the points below please indicate how knowledgeable you consider yourself to be about cars.

- | | |
|--|----|
| 1 = You have never used the product and are completely ignorant about the product. | 1 |
| | 2 |
| | 3 |
| | 4 |
| 5 = You have never really considered the product but have used it occasionally and hope now to use it. | 5 |
| | 6 |
| | 7 |
| | 8 |
| | 9 |
| 10 = You have used the product regularly, but have never considered its details thoughtfully or purchased it for yourself. | 10 |
| | 11 |
| | 12 |
| | 13 |
| | 14 |
| 15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered its details. | 15 |
| | 16 |
| | 17 |
| | 18 |
| | 19 |
| 20 = You know every aspect of the product and its uses at the level of an engineer or professional in the field. | 20 |

Suppose you were planning to buy a car, how important would you consider each of the following features to be in making a purchase decision. Please respond by placing a number between 1 and 9 in the space next to each feature to indicate its importance. A 1 indicates that the feature is not at all important and a 9 indicates that the feature is extremely important in making a decision. For your convenience the scale is presented below.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------------|---|---|---|---|---|---|---|-----------|
| NOT AT ALL | | | | | | | | EXTREMELY |
| IMPORTANT | | | | | | | | IMPORTANT |
| Brake and Braking Distance | | | | | | | | _____ |
| Maneuverability | | | | | | | | _____ |
| Fuel Tank Position | | | | | | | | _____ |
| Engine Protection | | | | | | | | _____ |
| Adjustable Overriding Seatbelt | | | | | | | | _____ |
| Airbag | | | | | | | | _____ |
| Collapsible Steering Wheel | | | | | | | | _____ |
| Car Locking System | | | | | | | | _____ |
| Passenger Capacity | | | | | | | | _____ |
| See Mileage | | | | | | | | _____ |
| Type of Hub Caps | | | | | | | | _____ |
| Driver Side | | | | | | | | _____ |
| Acronymless Design | | | | | | | | _____ |
| Sound | | | | | | | | _____ |
| Dashboard Controls/Displays | | | | | | | | _____ |
| Color | | | | | | | | _____ |
| Number of Cylinders | | | | | | | | _____ |
| Type of Fuel | | | | | | | | _____ |
| Engine Displacement | | | | | | | | _____ |
| Brake Type | | | | | | | | _____ |
| Front Wheel Drive | | | | | | | | _____ |
| Fuel Injection System | | | | | | | | _____ |
| Steering | | | | | | | | _____ |
| Differential | | | | | | | | _____ |
| Power Steering | | | | | | | | _____ |
| Power Brakes | | | | | | | | _____ |
| Power Windows | | | | | | | | _____ |
| Door Window Locking | | | | | | | | _____ |
| Door Window Glass | | | | | | | | _____ |
| Impact Absorb | | | | | | | | _____ |
| Cruise Control Settings | | | | | | | | _____ |
| Automatic Transmission | | | | | | | | _____ |
| Warranty | | | | | | | | _____ |
| Black Windows/Glass | | | | | | | | _____ |
| 5 Speeds | | | | | | | | _____ |
| Leg Room | | | | | | | | _____ |
| Suspension | | | | | | | | _____ |
| Bucket Seats | | | | | | | | _____ |

| | |
|------------------|-------|
| Air Conditioning | _____ |
| Audio | _____ |
| Books | _____ |
| Cameras | _____ |
| Computers | _____ |
| Control Systems | _____ |

APPENDIX C
CONFIDENTIAL CODE IN PARENT 3

You will see two pictures of two cars, one in a line. After you see each picture I would like you to respond to a set of four questions about the picture. After you respond to the questions about each picture, please look up so that I know when everyone is ready for the next picture. Now please turn to the next page and wait for the first picture. The pictures will be shown on the screen in front of the room.

Please indicate how familiar you are with the car now shown on the screen in the circle below.

1. Definitely never seen the car before.
2. I think I may have seen the car before but cannot remember what car it is.
3. Definitely seen the car before.
4. Definitely seen the car before and it is a _____.
(Please Fill in the blank)

Please indicate your agreement/disagreement with each of the two statements below by circling a number between 1 and 7.

It is a new looking car.

| | | | | | | | | |
|----------|---|---|---|---|---|---|---|----------|
| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY |
| AGREE | | | | | | | | DISAGREE |

I would consider buying a car that looks like the one in the picture.

| | | | | | | | | |
|----------|---|---|---|---|---|---|---|----------|
| STRONGLY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | STRONGLY |
| AGREE | | | | | | | | DISAGREE |

Please circle the appropriate response.

From the picture, the car looks like it is a:

- a. Subcompact car.
- b. Compact car.
- c. Mid-size car.
- d. Luxury car.
- e. Sports car.

APPENDIX B
QUESTIONNAIRE FOR PART 4

Using the scale below please indicate how knowledgeable you consider yourself to be about FDEs.

- | | |
|--|----|
| 0 = You have never used the product and are completely ignorant about the product. | 0 |
| | 1 |
| | 2 |
| | 3 |
| | 4 |
| 5 = You have never really considered the product but have used it occasionally and know how to use it. | 5 |
| | 6 |
| | 7 |
| | 8 |
| | 9 |
| 10 = You have used the product regularly, but have never considered its details thoroughly or purchased it for yourself. | 10 |
| | 11 |
| | 12 |
| | 13 |
| | 14 |
| 15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered its details. | 15 |
| | 16 |
| | 17 |
| | 18 |
| | 19 |
| 20 = You know every aspect of the product and its uses as the level of an engineer or professional in the field. | 20 |

Please respond to the question below by circling the appropriate response.

Do you own a VCR?

YES

NO

If you own a VCR or have owned one in the past, please indicate if you considered a number of brands and then purchased a VCR or you received the VCR as a gift or had someone else make the purchase decision for you. Please respond by circling the number presenting the correct response.

1. I considered a number of brands and then made a decision.
2. I received the VCR as a gift.
3. I did not really evaluate a number of brands. Rather, I based my decision on someone else's recommendation.
4. Although I decided for myself which brand I should buy, I did not seriously consider a number of alternatives prior to making my decision.

If you own a VCR or if you have owned a VCR in the past, please indicate how long ago you made the purchase. Please circle the the number presenting the correct response.

1. In the course of the last three months.
2. More than three months ago but not more than six months ago.
3. More than six months ago but less than a year ago.
4. More than a year ago but less than two years ago.
5. More than two years ago.

If you see a YN or have noted a YN in the past, please indicate for how many years you have noted a YN. Please respond by circling the number presenting the correct response.

- 1. 1 month or less.
- 2. 2 - 4 months.
- 3. 4 - 12 months.
- 4. 1 - 2 years.
- 5. 2 - 3 years.
- 6. 3 - 5 years.
- 7. More than 5 years.

Please respond to the multiple choice questions below by circling the correct answer.

1. The memory backup feature on a VCR refers to:
 - a. additional memory for storing information about what is recorded on your cassette.
 - b. auxiliary power source that will keep the program settings intact in case of a power outage at least.
 - c. None of the above.
2. When buying a TV set on a VCR:
 - a. The TV has to be left on and tuned to the channel being tested.
 - b. The TV has to be left on but not be tuned to any channel.
 - c. None of the above.
3. The audio dub feature on a VCR permits the user to:
 - a. add an audio track to a previously recorded video.
 - b. replace the video track to be replaced without affecting the audio track.
 - c. None of the above.
4. Which one of the following statements is true?
 - a. The beta format is currently more popular than the VHS format.
 - b. The VHS format is currently more popular than the beta format.
 - c. The two formats are equally popular.

5. The search feature of a VCR allows the user to:
- a. Scan the tape for a particular selection without losing the picture.
 - b. Advance the tape to the beginning of the next selection.
 - c. Stop at the stop.
6. Compared to other portable VCRs, a portable VCR weighing 10 lbs. would be considered:
- a. Light.
 - b. Heavy.
 - c. Ideal storage.
7. The maximum time of a VCR format cassette is:
- a. 3 hours.
 - b. 5 hours.
 - c. 8 hours.

Using the scale below please indicate how knowledgeable you consider yourself to be about Personal Computers (PC).

- | | |
|--|----|
| 1 = You have never used the product and are completely ignorant about the product. | 0 |
| | 1 |
| | 2 |
| | 3 |
| | 4 |
| 5 = You have never really considered the product but have used it occasionally and know how to use it. | 5 |
| | 6 |
| | 7 |
| | 8 |
| | 9 |
| 10 = You have used the product regularly, but have never considered its details thoughtfully or purchased it for yourself. | 10 |
| | 11 |
| | 12 |
| | 13 |
| | 14 |
| 15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered its details. | 15 |
| | 16 |
| | 17 |
| | 18 |
| | 19 |
| 20 = You have every aspect of the product and its uses at the level of an engineer or professional in the field. | 20 |

Please respond to the question below by circling the appropriate response.

Do you own a PC?

YES

NO

If you own a PC or have owned one in the past, please indicate if you considered a number of brands and then purchased a PC or you received the PC as a gift or had someone else make the purchase decision for you. Please respond by circling the number preceding the correct response.

1. I considered a number of brands and then made a decision.
2. I received the PC as a gift.
3. I did not seriously evaluate a number of brands. Rather, I based my decision on someone else's recommendation.
4. Although I decided for myself which brand I should buy, I did not seriously consider a number of alternatives prior to making my decision.

If you own a PC or if you have owned a PC in the past, please indicate how long ago you made the purchase. Please circle the the number preceding the correct response.

1. In the course of the past three months.
2. More than three months ago but not more than six months ago.
3. More than six months ago but less than a year ago.
4. More than a year ago but less than two years ago.
5. More than two years ago.

If you own a PG or have owned a PG in the past, please indicate the how many years you have owned a PG. Please respond by circling the number representing the correct response.

1. 1 month or less.
2. 2 - 4 months.
3. 4 - 12 months.
4. 1 - 2 years.
5. 3 - 5 years.
6. 6 - 9 years.
7. More than 9 years.

Please respond to the multiple-choice questions below by circling the correct answer.

1. The smallest unit of computer data is:
- a. Word.
 - b. Byte.
 - c. Bit.
2. The term "user" refers to:
- a. The instructions that tell you how to use a PC.
 - b. A collection of related data such as data on a mailing list.
 - c. None of the above.
3. The term "boot" refers to:
- a. Initializing the computer by loading the OS into the RAM.
 - b. Initializing the computer and its peripherals to a starting state.
 - c. None of the above.
4. The information stored in the ROM can be:
- a. Retrieved and used.
 - b. Retrieved, used, and updated when required.
 - c. None of the above.
5. A buffer is a place of temporary data:
- a. Increases the computational speed of the CPU.
 - b. Reduces the size of the RAM.
 - c. Links two computers over the telephone.

4. The CPU performs which of the following functions?
- a. Controls the flow of information within the computer.
 - b. Performs the actual computations.
 - c. Both of the above.

Being the scale below please indicate how knowledgeable you consider yourself to be about this:

- | | |
|---|----|
| 0 = You have never used the product and are completely ignorant about the product. | 0 |
| | 1 |
| | 2 |
| | 3 |
| | 4 |
| 1 = You have never really considered the product but have used it occasionally and know how to use it. | 5 |
| | 6 |
| | 7 |
| | 8 |
| | 9 |
| 10 = You have used the product extensively, purchased it for yourself, and thoughtfully considered the details. | 10 |
| | 11 |
| | 12 |
| | 13 |
| | 14 |
| 15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered the details. | 15 |
| | 16 |
| | 17 |
| | 18 |
| | 19 |
| 20 = You know every aspect of the product and the topic at the level of an engineer or professional in the field. | 20 |

Please respond to the question below by circling the appropriate response.

Do you own a car?

YES

NO

If you own a car or have owned one in the past, please indicate if you considered a number of brands and then purchased a car or you received the car as a gift or had someone else make the purchase decision for you. Please respond by circling the number providing the correct response.

1. I considered a number of brands and then made a decision.
2. I received the car as a gift.
3. I did not really evaluate a number of brands. Rather, I based my decision on someone else's recommendation.
4. Although I decided for myself which brand I should buy, I did not seriously consider a number of alternatives prior to making my decision.

If you own a car or if you have owned a car in the past, please indicate how long ago you made the purchase. Please circle the the number providing the correct response.

1. In the course of the last three weeks.
2. More than three months ago but not more than six months ago.
3. More than six months ago but less than a year ago.
4. More than a year ago but less than two years ago.
5. More than two years ago.

If you own a car or have owned a car in the past, please indicate for how many years you have owned a car. Please respond by circling the number preceding the correct position.

- 1. 3 months or less.
- 2. 3 - 6 months.
- 3. 6 - 12 months.
- 4. 1 - 2 years.
- 5. 2 - 3 years.
- 6. 3 - 5 years.
- 7. More than 5 years.

Please respond to the multiple choice questions below by choosing the correct answer.

1. The gear steering factor

- a. Is a measure of how much the steering wheel needs to be rotated to make a particular turn.
- b. Indicates whether the car is a front-wheel or rear-wheel drive car.
- c. None of the above.

2. The term engine displacement refers to:

- a. The position of the engine.
- b. The number of cylinders the engine has.
- c. The volume of the cylinders.

3. Road drive ratio is a measure of:

- a. The number of revolutions of the engine per minute.
- b. The number of revolutions of the engine for each turn of the wheel.
- c. None of the above.

4. Compared to large cars, compact cars:

- a. Are more noisy.
- b. Increase driver fatigue.
- c. Both of the above.

5. Compared to an automatic transmission, a manual transmission (stick shift)
- a. Provides greater fuel efficiency.
 - b. Is easier to use because it eliminates the clutch.
 - c. Increases engine wear.
6. Diesel engines have the following disadvantages compared to gasoline engines.
- a. Noisier.
 - b. Harder to start in cold weather.
 - c. Both of the above.
7. Automatic speed control has the following advantages.
- a. Helps certain drivers improve fuel economy.
 - b. Reduces driver fatigue.
 - c. Both of the above.
8. A turbocharger provides more power to a car by supplying more
- a. Fuel to the engine.
 - b. Air to the engine.
 - c. Both of the above.

APPENDIX E
SUBQUESTIONNAIRE FOR THE MAIN STUDY

Using the scale below please indicate how knowledgeable you consider yourself to be about cars, then your response by circling any number between 0 and 20 that best reflects your knowledge level. For your convenience, specific labels have been provided for the points 0, 5, 10, 15, and 20. Please read these descriptive labels carefully and then provide your response.

| | |
|--|----|
| 0 = You have never used the product and are completely ignorant about the product. | 0 |
| | 1 |
| | 2 |
| | 3 |
| | 4 |
| 5 = You have never really considered the product but have used it occasionally and know how to use it. | 5 |
| | 6 |
| | 7 |
| | 8 |
| | 9 |
| 10 = You have used the product regularly, but have never considered its details thoughtfully or purchased it for yourself. | 10 |
| | 11 |
| | 12 |
| | 13 |
| | 14 |
| 15 = You have used the product extensively, purchased it for yourself, and thoughtfully considered the details. | 15 |
| | 16 |
| | 17 |
| | 18 |
| | 19 |
| 20 = You know every aspect of the product and its uses at the level of an engineer or professional in the field. | 20 |

Please respond to the question below by circling the appropriate response.

Do you own a car?

YES

NO

If you own a car or have owned one in the past, please indicate if you considered a number of brands and then purchased a car or you received the car as a gift or had someone else make the purchase decision for you. Please respond by circling the number preceding the correct response.

1. I considered a number of brands and then made a decision.
2. I received the car as a gift.
3. I did not really evaluate a number of brands. Rather, I based my decision on someone else's recommendation.
4. Although I decided for myself which brand I should buy, I did not previously consider a number of alternatives prior to making my decision.

If you own a car or if you have owned a car in the past, please indicate how long ago you made the purchase. Please circle the number preceding the correct response.

1. In the course of the last three months.
2. More than three months ago but not more than six months ago.
3. More than six months ago but less than a year ago.
4. More than a year ago but less than two years ago.
5. More than two years ago.

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

If you own a car or have owned a car in the past, please indicate for how many years you have owned a car. Please respond by circling the number preceding the appropriate response.

1. 1 month or less.
2. 1 - 4 months.
3. 5 - 10 months.
4. 1 - 2 years.
5. 3 - 5 years.
6. 6 - 10 years.
7. More than 10 years.

Do you read our magazine (a-g, Car and Driver)?

1. Never 2. Occasionally 3. Regularly

Are you subscribed to our magazine?

1. No 2. Yes

Please indicate your familiarity with the car that was just now described. Please respond by circling a number between 1 and seven on the scale below.

| | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---------------|
| I AM CERTAIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | I AM CERTAIN |
| THAT I HAVE | | | | | | | | THAT I HAVE |
| NEVER SEEN | | | | | | | | SEEN THIS CAR |
| THIS CAR BEFORE | | | | | | | | BEFORE |

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

Please respond to the multiple choice questions below by marking the correct answer. Please answer all of the right questions on your own page.

1. The term steering factor refers to:
 - a. The amount the steering wheel needs to be rotated to make a particular turn.
 - b. Whether the car is a front-wheel or rear-wheel drive car.
 - c. Both of the above.
2. The term engine displacement refers to:
 - a. The position of the engine.
 - b. The number of cylinders the engine has.
 - c. The volume of the cylinders.
3. Fuel drive ratio is a measure of:
 - a. The number of revolutions of the engine per minute.
 - b. The number of revolutions of the engine for each turn of the wheel.
 - c. Both of the above.
4. Compared to large cars, compact cars are:
 - a. Safer.
 - b. More prone to driver fatigue.
 - c. Both of the above.

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

3. Compared to an automatic transmission a manual transmission offers which of the following:
- a. Provides greater fuel efficiency.
 - b. Is easier to use because it eliminates the clutch.
 - c. Increases engine output.
4. Diesel engines have the following advantages compared to gasoline engines:
- a. Smaller.
 - b. Harder to start in cold weather.
 - c. Both of the above.
5. Automatic speed control (cruise control) has the following advantages:
- a. Helps driver drivers improve fuel economy.
 - b. Reduces driver fatigue.
 - c. Both of the above.
6. A turbocharger provides more power to a car by supplying more:
- a. Fuel to the engine.
 - b. Air to the engine.
 - c. Both of the above.

Please respond to each of the statements below by placing a number between +3 and -3 to indicate the extent of your agreement/disagreement with the statement. A +3 indicates strong agreement, a -3 indicates strong disagreement, and a 0 indicates neutrality. For your convenience the scale is presented below.

| | STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|--|-------------------|----|----|----|---|----|----|----|----------------------|
| 1. There is too much emphasis on sex innuendo. | | | | | | | | | _____ |
| 2. I like to save and collect postage stamps. | | | | | | | | | _____ |
| 3. Children are the most important thing in a marriage. | | | | | | | | | _____ |
| 4. I would like to take a trip around the world. | | | | | | | | | _____ |
| 5. I would like to spend a year in Europe. | | | | | | | | | _____ |
| 6. I try to avoid foods that are high in cholesterol. | | | | | | | | | _____ |
| 7. I like to feel attractive to members of the opposite sex. | | | | | | | | | _____ |
| 8. I try to get about exercise regularly. | | | | | | | | | _____ |
| 9. I am concerned about how much mail I write. | | | | | | | | | _____ |
| 10. I don't like to take showers. | | | | | | | | | _____ |
| 11. I am not very good at saving money. | | | | | | | | | _____ |
| 12. I want to look a little different from others. | | | | | | | | | _____ |
| 13. All men should be clean shaven every day. | | | | | | | | | _____ |
| 14. Every meeting should be educational. | | | | | | | | | _____ |
| 15. I like to think I am a bit of a snigger. | | | | | | | | | _____ |
| 16. I have old-fashioned tastes and habits. | | | | | | | | | _____ |
| 17. I often wish for the good old days. | | | | | | | | | _____ |
| 18. I enjoy looking through fashion magazines. | | | | | | | | | _____ |
| 19. There should be a gun in every home. | | | | | | | | | _____ |
| 20. A college education is very important. | | | | | | | | | _____ |

Please provide the following information:

1. Date of birth: _____

2. Sex: Male Female (Please use)

3. Institute Major: _____

4. Year in college: _____

5. Race: _____

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

Please respond to the first five questions by checking a number between 1 and 7.

Did you find the experiment interesting?

| | | | | | | | | |
|---------------------|---|---|---|---|---|---|---|------------------------|
| VERY
INTERESTING | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY
DISINTERESTING |
|---------------------|---|---|---|---|---|---|---|------------------------|

Did you find the experiment too long?

| | | | | | | | | |
|--------------|---|---|---|---|---|---|---|------------------|
| VERY
LONG | 1 | 2 | 3 | 4 | 5 | 6 | 7 | NOT VERY
LONG |
|--------------|---|---|---|---|---|---|---|------------------|

Did you find the instructions to be clear?

| | | | | | | | | |
|---------------|---|---|---|---|---|---|---|-----------------|
| VERY
CLEAR | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY
UNCLEAR |
|---------------|---|---|---|---|---|---|---|-----------------|

Did you find the familiarity measure easy to respond to?

| | | | | | | | | |
|--------------|---|---|---|---|---|---|---|--------------|
| VERY
EASY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY
HARD |
|--------------|---|---|---|---|---|---|---|--------------|

Did you find the quiz easy?

| | | | | | | | | |
|--------------|---|---|---|---|---|---|---|--------------|
| VERY
EASY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY
HARD |
|--------------|---|---|---|---|---|---|---|--------------|

Please respond to this question by checking the appropriate response.

Did you think the quiz assessed your knowledge of math?

| | |
|-----|----|
| YES | NO |
|-----|----|

STOP! DO NOT TURN TO THE NEXT PAGE

Please rate the advertising strategy on each of the five scales presented below. Please indicate your response on each scale by circling a number between +3 and -3.

| | | | | | | | | |
|------------|----|----|----|---|----|----|----|-------------|
| GOOD | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Bad |
| PLAUSIBLE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Implausible |
| Likable | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Not Likable |
| Identified | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Not |
| Desirable | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Undesirable |
| Effective | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Ineffective |

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

items below are a set of six adjectives. Please rate your reaction to the adjectives listed by circling a number between +3 and -3 on the scales presented below each of the adjectives.

ADAPT

VERY MUCH SO +3 +2 +1 0 -1 -2 -3 NOT AT ALL

ADAPT

VERY MUCH SO +3 +2 +1 0 -1 -2 -3 NOT AT ALL

ADAPTIVE

VERY MUCH SO +3 +2 +1 0 -1 -2 -3 NOT AT ALL

ADAPTIVE

VERY MUCH SO +3 +2 +1 0 -1 -2 -3 NOT AT ALL

ADAPTIVE

VERY MUCH SO +3 +2 +1 0 -1 -2 -3 NOT AT ALL

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

Given below are a set of five statements about the **BRAND** that you just saw advertised. Please indicate the extent of your agreement/disagreement with each statement by circling a number between +3 and -3 on the scales below each of the statements. A +3 indicates strong agreement and a -3 indicates strong disagreement.

I think it is a good brand.

| | | | | | | | | |
|-------------------|----|----|----|---|----|----|----|----------------------|
| STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|-------------------|----|----|----|---|----|----|----|----------------------|

I like the brand.

| | | | | | | | | |
|-------------------|----|----|----|---|----|----|----|----------------------|
| STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|-------------------|----|----|----|---|----|----|----|----------------------|

I think it is a bad brand--

| | | | | | | | | |
|-------------------|----|----|----|---|----|----|----|----------------------|
| STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|-------------------|----|----|----|---|----|----|----|----------------------|

I think it is a nice brand.

| | | | | | | | | |
|-------------------|----|----|----|---|----|----|----|----------------------|
| STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|-------------------|----|----|----|---|----|----|----|----------------------|

I am extremely dissatisfied toward the brand.

| | | | | | | | | |
|-------------------|----|----|----|---|----|----|----|----------------------|
| STRONGLY
AGREE | +3 | +2 | +1 | 0 | -1 | -2 | -3 | STRONGLY
DISAGREE |
|-------------------|----|----|----|---|----|----|----|----------------------|

PLEASE TURN TO THE NEXT PAGE AND CONTINUE

Now go back to your responses to the first ten items. On the first page you were asked to list your own thoughts and in the second you were asked to describe the product to a friend; and rate each response along the two scales presented below.

The first scale is designed to measure how evaluatively positive/negative each response is-- in thought may help illustrate how to use this scale. Imagine that you are in the process of buying a car and decide to try a new brand. Well, it doesn't. You discover that the new make has a green flower. Depending on how much you liked the flower you would give it a rating between +1 and +3. On reading the paper, however, you discover that each of you, having decided NOT to purchase, because you are allergic reactions, this is a drawback. Now, you may give it a rating between -1 and -3 depending on how terrible the allergic reaction is for you.

Now please indicate the evaluative implications of each response using the bipolar scale described below. Provide your response by putting a number between +3 and -3, that best reflects the positive/negative/ness of each thought. In the column on the right hand side of the response sheet. The letter E is at the top of the column to indicate that this space is for the purpose of evaluation. Remember, a +3 indicates extremely positive, a -3 indicates extremely negative, and a 0 indicates that the response is evaluatively neutral.

| | | | | | | | | |
|-----------|----|----|----|---|----|----|----|-----------|
| EXTREMELY | +3 | +2 | +1 | 0 | -1 | -2 | -3 | EXTREMELY |
| POSITIVE | | | | | | | | NEGATIVE |

The second scale is designed to evaluate the relative importance of each response in forming an evaluation of the advertisement brand. That is, in general, how important is the response or feature recalled in making a decision. Please indicate your response by putting a number between 1 and 7 that best reflects the importance of the thought in forming an evaluation. A 1 indicates that the response is not at all important and a 7 indicates that it is extremely important in forming an evaluation. Place your response in the column marked with the letter I (Importance) on the right hand side of the page.

| | | | | | | | | |
|------------|---|---|---|---|---|---|---|-----------|
| NOT AT ALL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | EXTREMELY |
| IMPORTANT | | | | | | | | IMPORTANT |

AFTER YOU COMPLETE THE ABOVE THREE DECISION MAPS, TURN TO THE NEXT PAGE FOR MORE INSTRUCTIONS

Re: 40-50 Your responses to the recall task. For each program, you are to indicate (i) how negatively positive/negative the tone is, (ii) how important each item is to you, (iii) its function as a metaphor, and (iv) whether you believe that the brand actually possesses the feature. The three scale anchors are described below. Be sure to read the descriptions and understand how you are to use them before you proceed.

Please indicate how positive/negative each response is by placing a number between +3 and -3 next to each line provided. Use the space provided in the column marked 0 to give your response. Remember, a +3 indicates extremely positive; a -3 indicates extremely negative, and a 0 indicates that the line is neutrally assessed. The coded data is provided below for your convenience.

| | | | | | | | | |
|----------|----|----|----|---|----|----|----|----------|
| STRENGTH | -3 | -2 | -1 | 0 | +1 | +2 | +3 | STRENGTH |
| WEAKNESS | | | | | | | | WEAKNESS |

Please indicate how important each item revealed is in forming your evaluation of the brand by placing a number between 1 and 7 next to each item revealed. A 7 designates that the item revealed is extremely important and a 1 indicates that the item is not at all important. Use the space provided at the bottom marked 1 to give your responses. The rating scale is presented below for your information.

[illegible]

Please indicate how likely it is that the listed statement each of the items you have reviewed. 1 -3 indicates that you believe that the item is extremely likely to prevent the characteristics you have reviewed. 1 -3 indicates that the item is somewhat unlikely to prevent the characteristics that you have reviewed. Use the space provided in the column marked 4 to give your reasons. The rating scale is presented below.

| | | | | | | | | |
|------------------|----|----|----|---|----|----|----|-------------------|
| EXTREMELY
LOW | -3 | -2 | -1 | 0 | +1 | +2 | +3 | EXTREMELY
HIGH |
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EDUCATION, CONT'D

I was born in Columbia, India, on July 5, 1934. My primary and high school education spanned six schools, in four cities, across two continents.

I started school in Columbia but within a year moved to a school in Delhi, the capital of India. Before the year was out, I was back in school in Columbia but, again, I was to move within a year to Chennai, S.E., where I spent a remarkable year.

It was upon my return to Chennai, that I spent the longest stretch in one school. I went to San Thome High School from 1946-1973.

In mid-1973 we moved to Manchester, S.E. I joined St. Gregory's Grammar School for Boys and graduated from high school in 1976.

I returned to India and joined the B.Sc. program in Chemistry at Anderson University, Columbia, in fall 1978.

Upon graduating in 1979, I took a job as a salesman with a small packaging company in India. In two years I was ready to return to school.

I enrolled in the graduate program in management at the Indian Institute of Management at Ahmedabad and received my master's degree in marketing and finance in March 1981.

I arrived in the U.S. in the fall of 1984. After spending a year in the doctoral program in marketing at the Wharton School, University of Pennsylvania, I transferred to the University of Florida to pursue specific research interests.

I am currently assistant professor, Faculty of Management, McGill University, Montreal, Canada.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


Robert W. Allen, Chairman
Assistant Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


Dr. E. Frazier
Professor of Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


Richard J. Lutz
Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


John B. Lynch, Jr.
Associate Professor of Marketing

This Dissertation was submitted to the Graduate Faculty of the Department of Marketing in the College of Business Administration and to the Graduate Council and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 1966


Dean, Graduate Council